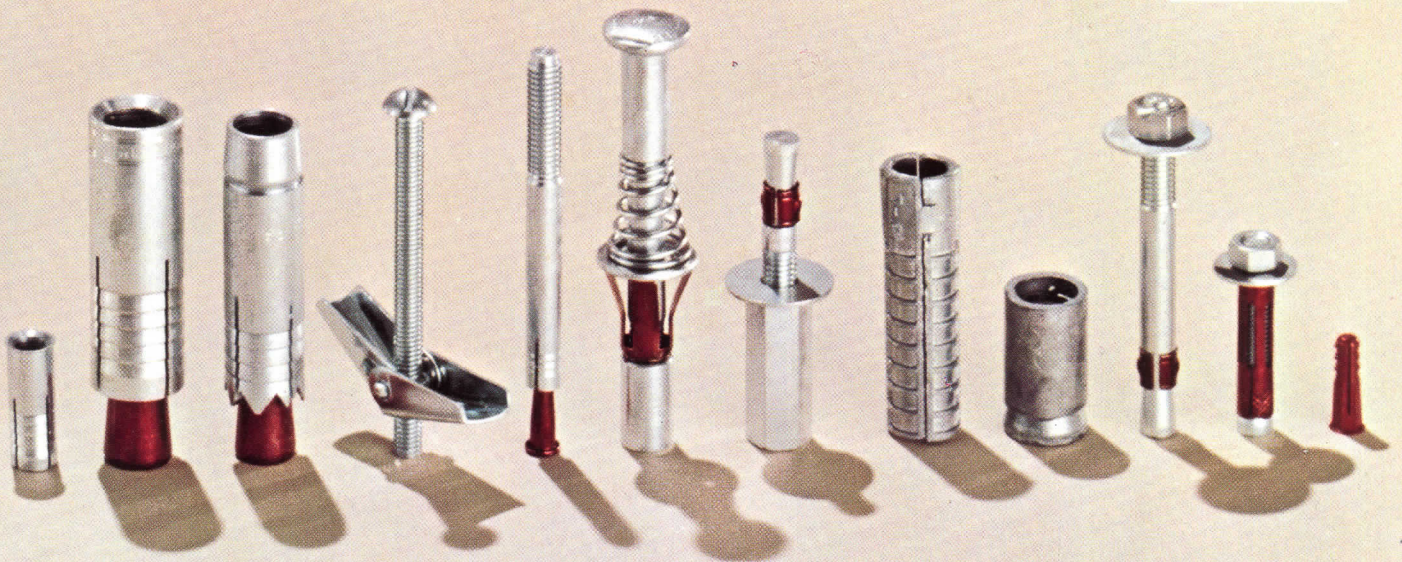




747

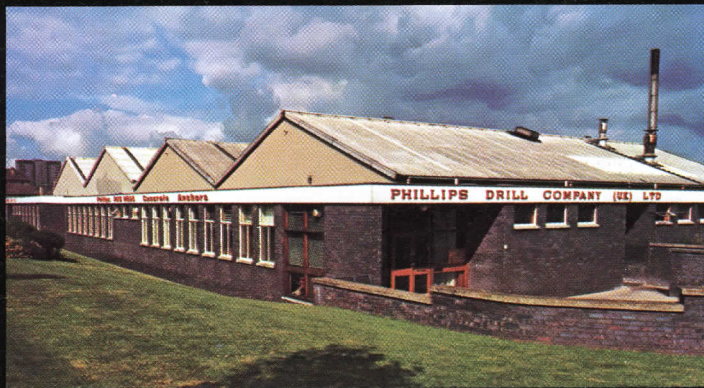
**ancho
system**

anchoring systems



RED HEAD around the world

Phillips is the WORLD'S LARGEST manufacturer of heavy duty expansion anchors. Our production and warehousing facilities have been continually updated and expanded worldwide to supply the growing international demand for quality RED HEAD products. In addition to our headquarters plant in the U.S., RED HEADS are manufactured by three wholly owned subsidiaries and by licensees in Tokyo, Japan and Johannesburg, South Africa.



Glasgow, Scotland



Toronto, Canada



Katzenbach, W. Germany

...and at home

Pictured here with our Michigan City, Indiana headquarters plant, are three typical operations that contribute to the enviable reputation for consistent quality that RED HEAD enjoys. With a continuing sense of professionalism . . . creative engineering and strict quality control, Phillips maintains world leadership in the anchoring industry.



Heat Treat Furnaces



Special Purpose Machinery



Warehousing

the **RED HEAD** success story

The Phillips Drill Company manufactured the world's first self-drilling anchor in 1910. We called them Phillips Shields in those days and thru innovative engineering and quality control procedures, they became a standard of the industry, recognized for superior strength and quality.

In the '50's, we moved from Chicago to our present facility in Michigan City, Indiana. Production was increased and an efficient sales organization was formed creating a network of thousands of wholesale distributors thru-out the country.

Every step in the manufacture of RED HEAD Self-Drilling Anchors is performed in our factory to guarantee the best possible quality control. While self-drilling anchors remained the standard of the industry, there arose a demand for high quality non-drilling anchors and anchoring systems. This led to our programs of development, engineering and production to fill industry requirements. Today, RED HEAD offers an anchor style and size for practically every fastening application.

This has been our story through the years...we've maintained our position of leadership as the world's largest manufacturer of heavy-duty masonry anchors through a sensitivity to industry needs and the ability to quickly supply superbly engineered quality controlled products.

NORTHWEST OHIO CORP.
CONTRACTORS & INDUSTRIAL EQUIPMENT
101 N. WESTWOOD
531-2833 TOLEDO, OHIO 43607

RED HEAD products are sold only through distributors.

And this makes life easier for our customers...

Your RED HEAD wholesale distributor offers the convenience of a local source of supply for fast, efficient delivery. Your distributor or one of our factory trained field representatives can give immediate attention to your RED HEAD requirements and assist in solving your anchoring problems. Contact your local RED HEAD district sales office (listed on the inside back cover) for the nearest authorized RED HEAD Distributor.

And don't forget...

The independent RED HEAD Service Stations (locations shown on inside back cover) offer prompt, reliable service for your RED HEAD Power Tools.

IMPORTANT!
ALWAYS WEAR SAFETY GLASSES

Product prices subject to change without notice.



index

Carbide Bits	Page 19
Hammers and Accessories	
747 Roto Stop Hammer	Page 18
747 Kit and Accessories	Page 19
606 Hammer/Drill	Page 20
606 Kit, and Accessories	Page 20
K-457 Impact Hammer	Page 20
K-457 Kit, and Accessories	Page 20
Interchangeable Chucks	Page 17
Hollow Wall Anchors	Page 13
Lag Shields	Page 12
Lead Calking Anchors	Page 11
Multi-Set Drop In Anchors	Page 5
Non-Drilling Anchors	Page 5
Plastic Anchors and Kits	Page 12
Self-Drilling Anchors	Page 4
Self-Drilling Anchor Accessories	Page 16
Self-Drilling Anchor and Pin System	Page 15
Sleeve Anchors	Page 8
Sleeve Anchors, Stainless Steel	Page 9
Steel Deck Inserts and Bits	Page 13
Stud Anchors	Page 10
Toggle Bolts	Page 11
Wedge Anchors	Page 6
Wedge Anchors, Stainless Steel	Page 7
Wedge Rod Anchors	Page 14



self-drilling anchors

- Drills its own hole, eliminating costly carbide bits.
- Resists shock and vibration.
- Installs fast, easily and economically with the 747 Roto Stop Hammer.

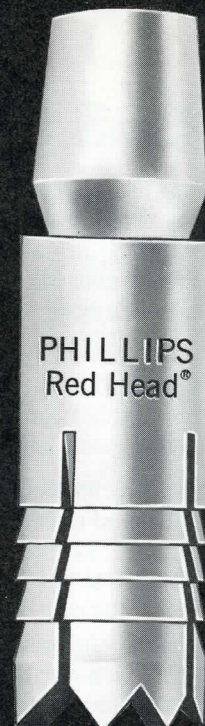
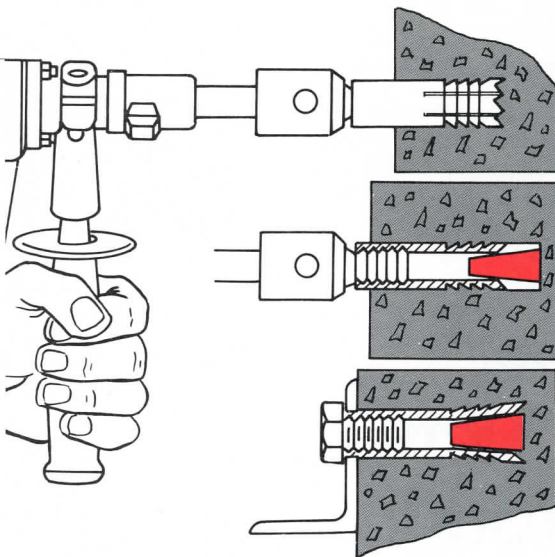
The RED HEAD Self-Drilling Anchor provides its own case-hardened steel drill for every hole, eliminating the need for expensive and easily damaged carbide drills. Its unique design assures consistent holding capacity plus superior resistance to shock and vibration. It's the most dependable heavy duty anchor in the industry. Installation with the 747 Roto Stop Hammer creates one of the fastest, simplest and most economical "anchoring systems" in the world.

INSTALLATION

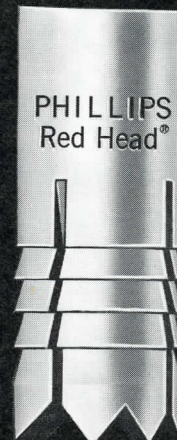
1. **DRILL HOLE** — Remove anchor and clean out hole. Place red plug in anchor.

2. **EXPAND ANCHOR** — Reinsert anchor in hole and expand until flush. Snap off cone.

3. **BOLT** — Secure object to complete installation.



Anchors for use with hot dipped galvanized bolts available on special orders in Snap Off and Flush Anchors for 1/4", 3/8", 1/2", 5/8", 3/4" and 7/8" bolts. Be sure to specify when ordering.



Snap off type

For installation with electric or air impact hammers.

					* Load Capacity in 3500 P.S.I. Concrete, LBS.	
Cat. No.	Bolt Size	Depth In Concrete	Thread Depth	Outside Diameter	Pullout	Shear
• S-14	1/4"	1 13/32"	3/8"	7/16"	3670	1335
• S-16	3/8"	1 15/16"	15/32"	15/32"	4060	2030
• S-38	3/8"	1 17/32"	9/16"	9/16"	5670	3370
• S-12	1/2"	2 1/32"	13/16"	1 1/16"	8500	6720
• S-58	5/8"	2 15/32"	15/16"	1 27/32"	11,700	11,900
• S-34	3/4"	3 1/4"	1 7/32"	1"	16,200	16,200
• S-78	7/8"	3 11/16"	1 13/32"	1 1/8"	17,850	18,450

Flush type

For hand installation with FH-300 series flush/holders. (See P. 16)

					* Load Capacity in 3500 P.S.I. Concrete, LBS.	
Cat. No.	Bolt Size	Thread Depth	Depth In Concrete	Outside Diameter	Pullout	Shear
• F-14	1/4"	13/32"	1 1/4"	7/16"	3670	1335
• F-16	3/8"	3/8"	1 7/32"	15/32"	4060	2030
• F-38	3/8"	15/32"	1 7/16"	9/16"	5670	3370
• F-12	1/2"	23/32"	1 15/16"	1 1/16"	8500	6720
• F-58	5/8"	7/8"	2 3/8"	1 27/32"	11,700	11,900
• F-34	3/4"	1 1/8"	3"	1"	16,200	16,200

*Based on Independent Testing Laboratory tests. Report available on P. 21. Tests conducted in stone aggregate concrete.

For manufacturers recommended safe working loads use 25% of above load values.

Meets or exceeds U.S. Government G.S.A. Specification No. FF-S-325, Group III, Type 1. (Dated 9/10/57)

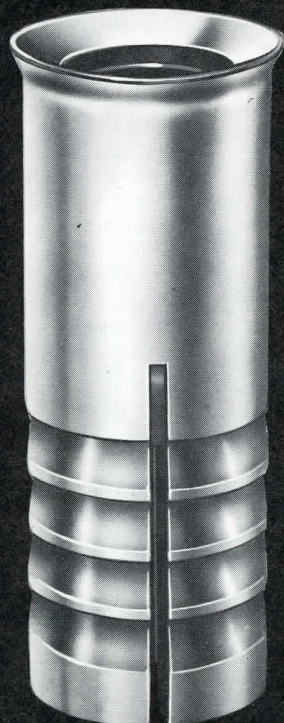
For installation in structural light weight concrete use 70% of the above load values.

• Listed by ICBO

ICBO (See Research Recommendation No. 1372 of the International Conference of Building Officials.)



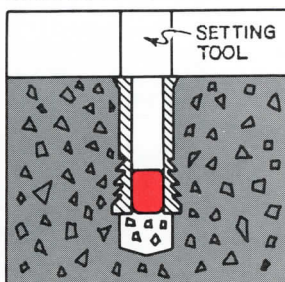
multi-set, steel flange drop-in anchor



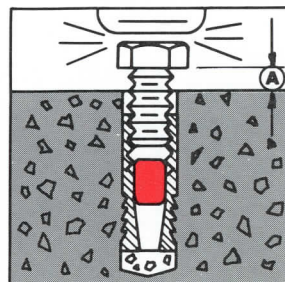
- **Non-bottom bearing. Does not require precise hole depth or hole clean out.**
- **Can be set at any desired depth**
- **Pre-assembled plug won't fall out in shipment**
- **Smaller hole size than other drop-ins**
- **Standard inch drill sizes**
- **Requires less depth than Non-Drill type**
- **Slotted four ways for uniform expansion**

A SETTING TOOL IS INCLUDED WITH EACH 100 ANCHORS FREE OF CHARGE

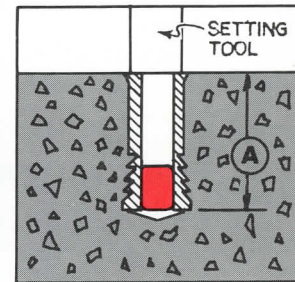
THIS VERSATILE MEDIUM DUTY ANCHOR CAN BE INSTALLED 3 WAYS.



1. Drill hole any depth. Flange permits anchor to be set flush with surface. Anchor can be set at any desired depth within a bottomless hole.



2. (a) Thread bolt into anchor. (b) Hammer anchor into hole until bolt head is at desired height [A]. (c) Remove bolt. (d) Set anchor with setting tool.



3. Drill hole depth (A) equal to length of anchor. Clean out hole. Drop anchor in hole and set with setting tool.

Cat. No.	Bolt Size	Drill Size	Thread Depth	Min. Hole Depth	* Load Capacity in 3500 P.S.I. Concrete, LBS.		Setting Tool Cat. No.
					Pullout	Shear	
MS-14	1/4"	3/8"	1/2"	1"	2150	1700	MT-14
MS-38	3/8"	1/2"	1/2"	1 3/8"	3300	3450	MT-38
MS-12	1/2"	5/8"	3/4"	1 3/4"	5450	6050	MT-12
MS-58	5/8"	3/4"	1"	2 1/4"	7000	8800	MT-58
MS-34	3/4"	1"	1 1/4"	2 1/2"	9225	14,500	MT-34

*Based on Independent Laboratory tests, report on P. 21. Tests conducted in stone aggregate concrete. For manufacturers safe working loads use 25% of load values. For installation in structural light weight concrete use 70% of the load values.

non-drilling anchors

- **Dependable load capacity due to the same expansion principle as the Red Head Self-Drilling Anchor.**
- **Easily installed in holes drilled with the 747 Roto Stop Hammer using Phillips Carbide Tipped Drill Bits.**

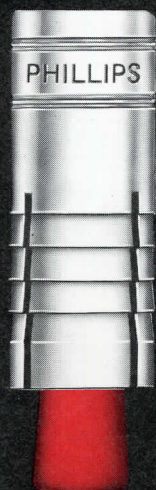
A SETTING TOOL IS INCLUDED WITH EACH 100 ANCHORS FREE OF CHARGE.

Cat. No.	Bolt Size	Drill Size	Thread Depth	Drilled Depth	* Load Capacity in 3500 P.S.I. Concrete, LBS.		Setting Tool Cat. No.
					Pullout	Shear	
J-14	1/4"	7/16" (.4375)	3/8"	1 1/8"	3000	2300	JD-14
J-38	3/8"	9/16" (.5625)	15/32"	1 1/4"	4500	4450	JD-38
J-12	1/2"	1 1/16" (.6875)	23/32"	2 1/16"	6800	7000	JD-12
J-58	5/8"	27/32" (.84375)	7/8"	2 9/16"	9700	8100	JD-58
J-34	3/4"	1" (1.00)	1 1/8"	3 3/16"	15,500	11,300	JD-34

*Based on Independent Laboratory tests, report on P. 21. Tests conducted in stone aggregate concrete. For manufacturers safe working loads use 25% of load values. For installation in structural light weight concrete use 70% of the load values.

Meets or exceeds U.S. Government G.S.A. Specifications FF-S-325 Group VIII, Type 1. Interim Amendment-3 (Dated 4/16/65)

NOTE: Maintain an accurate hole size for proper installation and performance.



Listed by



ICBO

ICBO (See Research Recommendation No. 1372 of the International Conference of Building Officials.)

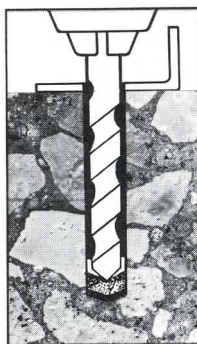


wedge anchors

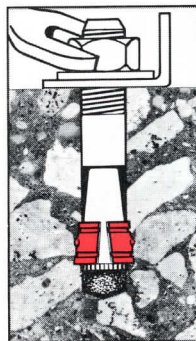
- *Non-bottom bearing. Does not require precise hole depth or hole clean out.*
- *Anchor size equals hole size so that it can be installed through object to be fastened.*
- *Can be installed in thin sections of concrete.*
- *Anchor can be hammered below the surface of the concrete when no longer needed.*
- *The one piece expander is formed around the anchor, assuring full expansion for dependable, superior holding power. Expander can not fall off or twist in the hole.*
- *Supplied complete with nuts and washers.*

INSTALLATION

1. Drill hole to any depth exceeding the embedment.



2. Insert anchor and expand by tightening nut.

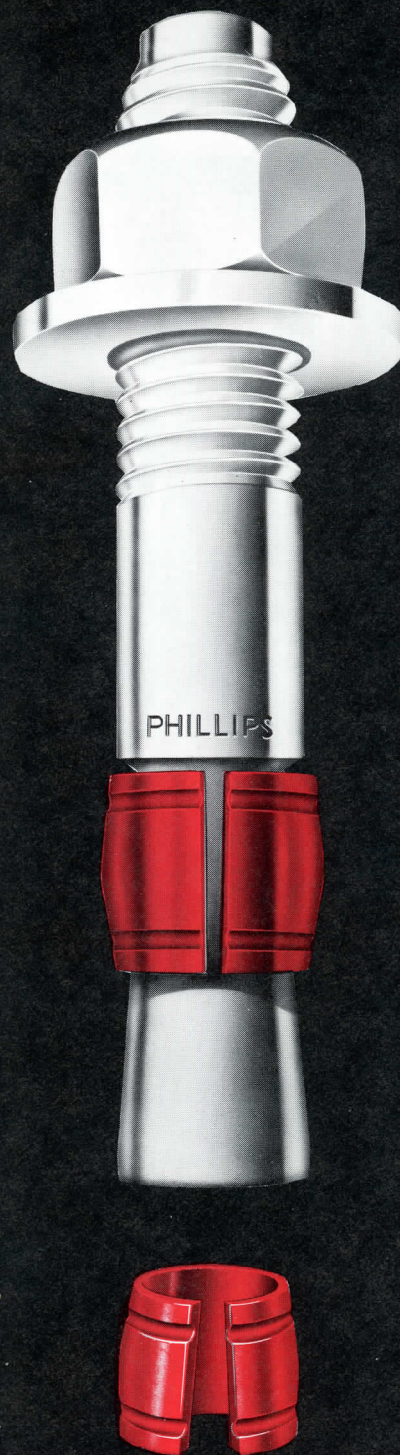


Catalog Number	Anchor Size & Drill Size	A Overall Length	B Max. Thickness of Material to be Fastened	C Thread Length	D Min. Embedment in Concrete	* Load Capacity in 3500 PSI Concrete, Lbs.		Installation Torque (Ft.-Lbs.)
						Pullout	Shear	
WS-1416 WS-1422 WS-1432	1/4"	1 3/4" 2 1/4" 3 1/4"	1/2" 1" 2"	3/4" 3/4" 3/4"	1 1/8"	2400	2325	10 Max.
• WS-3822 • WS-3826 • WS-3836 • WS-3850	3/8"	2 1/4" 2 3/4" 3 3/4" 5"	5/8" 1 1/8" 2 1/8" 3 3/8"	1 1/8" 1 1/8" 1 1/8" 1 1/8"	1 1/2"	4100	5000	25-35
• WS-1226 • WS-1242 • WS-1254 • WS-1270	1/2"	2 3/4" 4 1/4" 5 1/2" 7"	3/8" 1 7/8" 3 1/8" 4 5/8"	1 1/4" 1 1/4" 1 1/4" 1 1/4"	2 1/4"	5900	8400	45-65
• WS-5834 • WS-5850 • WS-5860 • WS-5870 • WS-5884	5/8"	3 1/2" 5" 6" 7" 8 1/2"	5/8" 2 1/8" 3 1/8" 4 1/8" 5 5/8"	1 1/2" 1 1/2" 1 1/2" 1 1/2" 1 1/2"	2 3/4"	7825	12,000	80-90
• WS-3442 • WS-3454 • WS-3470 • WS-3484 • WS-34100	3/4"	4 1/4" 5 1/2" 7" 8 1/2" 10"	7/8" 2 1/8" 3 5/8" 5 1/8" 6 5/8"	1 1/2" 1 1/2" 1 1/2" 1 1/2" 1 1/2"	3 1/4"	11,500	17,000	125-175
• WS-7860 • WS-7880 • WS-78100	7/8"	6" 8" 10"	1 7/8" 3 7/8" 5 7/8"	2 1/4" 2 1/4" 2 1/4"	4"	11,850	24,900	200-250
WS-10060 WS-10090 WS-100120	1"	6" 9" 12"	1 3/8" 4 3/8" 7 3/8"	2 1/4" 2 1/4" 2 1/4"	4 1/2"	16,300	35,400	250-300
WS-12590 WS-125120	1 1/4"	9" 12"	3 3/8" 6 3/8"	3 1/4" 3 1/4"	5 1/2"	40,600	48,600	400-500

*Based on Independent Laboratory tests report on P. 22. Tests conducted in stone aggregate concrete. For manufacturers safe working loads use 25% of load values. For installation in structural light weight concrete use 70% of load and torque values.

Meets or exceeds U.S. Government G.S.A. Specifications FF-S-325 Group II, Type 4, Class 1. Interim Amendment - 3 (Dated 4/16/65).

NOTE: Maintain an accurate hole size for proper installation and performance.



The solid one piece wrap around steel expander makes the Red Head Wedge the only anchor of its kind.

Since the expander is one solid piece, with exclusive coined grooves, it glides over the taper, assuring total expansion and guaranteeing maximum holding power in the concrete.

• Listed by ICBO

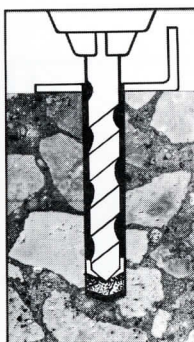
ICBO (See Research Recommendation No. 1372 of the International Conference of Building Officials.)

stainless steel wedge anchors

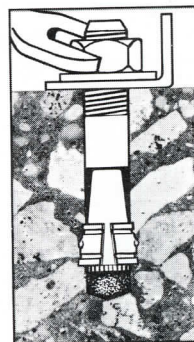
- *Stainless Steel Wedge Anchors operate under the same principle as the plain Steel Wedge Anchors.*
- *Type 303 Stainless Steel.*
- *Supplied complete with Stainless Steel nuts and washers.*

The Stainless Steel Wedge Anchors are especially designed for use in construction of facilities such as water purification plants, sewage treatment plants, dairies, food processing plants, chemical plants and laboratories, power plants, aerospace equipment or architecture applications. Easily installed in holes drilled with RED HEAD 606 Hammer Drill for smaller Wedge Anchors or the RED HEAD 747 Roto Stop Hammer for the larger size.

INSTALLATION



1. Drill hole to any depth exceeding the embedment.

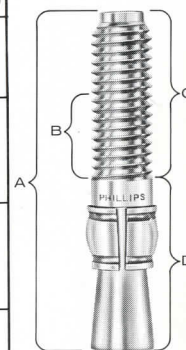


2. Insert anchor and expand by tightening nut.



**Non-Corrosive Stainless Steel
expander clip.**

Catalog Number	Anchor Size & Drill Size	A Overall Length	B Max. Thickness of Material to be Fastened	C Thread Length	D Min. Embedment in Concrete	* Load Capacity in 3500 PSI Concrete, Lbs.		Installation Torque (Ft.-Lbs.)
						Pullout	Shear	
WW-1416 WW-1422 WW-1432	1/4"	1 3/4" 2 1/4" 3 1/4"	1/2" 1" 2"	3/4" 3/4" 3/4"	1 1/8"	2400	2325	10 Max.
• WW-3822 • WW-3826 • WW-3836 • WW-3850	3/8"	2 1/4" 2 3/4" 3 3/4" 5"	5/8" 1 1/8" 2 1/8" 3 3/8"	1 1/8" 1 1/8" 1 1/8" 1 1/8"	1 1/2"	4100	5000	25-35
• WW-1226 • WW-1242 • WW-1254 • WW-1270	1/2"	2 3/4" 4 1/4" 5 1/2" 7"	3/8" 1 1/8" 3 1/8" 4 5/8"	1 1/4" 1 1/4" 1 1/4" 1 1/4"	2 1/4"	5900	8400	45-65
• WW-5834 • WW-5850 • WW-5860 • WW-5870 • WW-5884	5/8"	3 1/2" 5" 6" 7" 8 1/2"	5/8" 2 1/8" 3 1/8" 4 1/8" 5 5/8"	1 1/2" 1 1/2" 1 1/2" 1 1/2" 1 1/2"	2 3/4"	7825	12,000	80-90
• WW-3442 • WW-3454 • WW-3470 • WW-3484 • WW-34100	3/4"	4 1/4" 5 1/2" 7" 8 1/2" 10"	7/8" 2 1/8" 3 5/8" 5 1/8" 6 5/8"	1 1/2" 1 1/2" 1 1/2" 1 1/2" 1 1/2"	3 1/4"	11,500	17,000	125-175
• WW-7860 • WW-7880 • WW-78100	7/8"	6" 8" 10"	1 7/8" 3 7/8" 5 7/8"	2 1/4" 2 1/4" 2 1/4"	4"	11,850	24,900	200-250



*Based on Independent Laboratory tests report on P. 22. Tests conducted in stone aggregate concrete. For manufacturers safe working loads use 25% of load values. For installation in structural light weight concrete use 70% of load and torque values.

• Listed by   ICBO

ICBO (See Research Recommendation No. 1372 of the International Conference of Building Officials.)

Meets or exceeds U.S. Government G.S.A. Specifications FF-S-325 Group II, Type 4, Class 1. Interim Amendment - 3 (Dated 4/16/65).

NOTE: Maintain an accurate hole size for proper installation and performance.



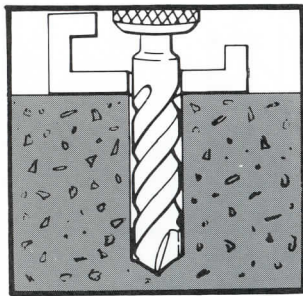
sleeve anchors

For use in solid concrete and in hollow or solid masonry units.

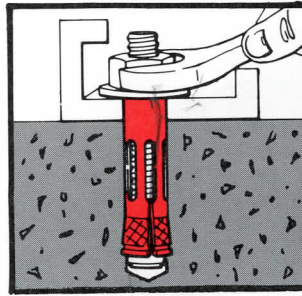
- **Preassembled for quick and easy installation.**
- **A wide variety of job designed head styles for every application.**
- **Six-ribbed design assures that the object will be securely clamped to the concrete.**
- **Exclusive RED HEAD expander ring eliminates galling between the expander sleeve and the tapered head of the bolt.**

The sleeve anchor is one of the most versatile anchors available, with a head style for every application including selected sizes with flat and round heads of stainless steel. Installation is made easy by using the RED HEAD 606 Hammer Drill for the smaller Sleeve Anchors and the RED HEAD 747 Roto Stop Hammer for the larger sizes.

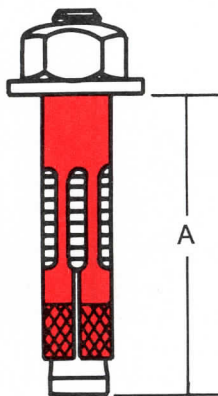
INSTALLATION



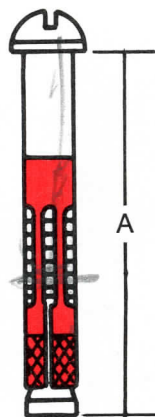
1. Drill hole to any depth exceeding the embedment.



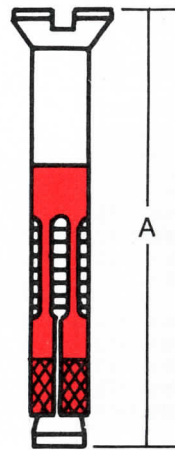
2. Insert anchor and expand by tightening nut or head.



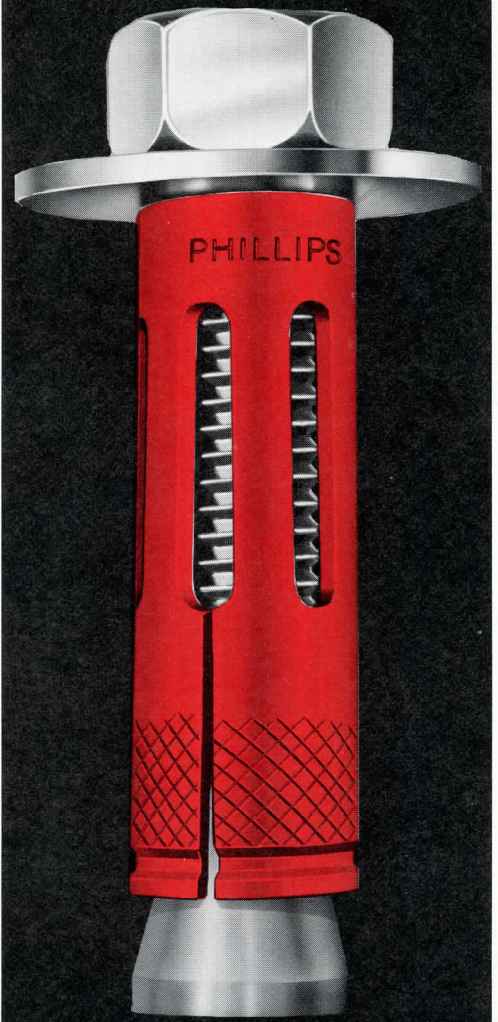
ACORN NUT
HEX NUT
STUD BOLT



ROUND HEAD



FLAT HEAD



• Listed by  ICBO

All Sleeve Anchors are listed by ICBO (See Research Recommendation No. 1372 of the International Conference of Building Officials.)

Meets or exceeds U.S. Government G.S.A. Specifications FF-S-325 Group II, Type 3, Class 3. Interim Amendment-3 (Dated 4/16/65)

sleeve anchors

ACORN NUT

HEX NUT

FLAT HEAD

THRESHOLD
FLAT HEAD

PHILLIPS
ROUND HEAD

STUD BOLT

TIE WIRE



MULTIPLE USE ANCHOR

FILLER SLEEVE

NOTE: Maintain an accurate hole size for proper installation and performance.

*Based on Independent Laboratory tests report on Page 22.

Tests conducted in stone aggregate concrete. For manufacturers safe working loads use 25% of load values.

For installation in structural light weight concrete use 70% of load and torque values.

Head Style	Catalog Number	Anchor Size & Drill Size	A Anchor Length	Min. Hole Depth	Maximum Thickness of Material To Be Fastened	* Load Capacity in 3500 P.S.I. Concrete, LBS.		Torque (Ft. Lbs.) For Full Expansion
						Pullout	Shear	
ACORN NUT	AN-1405	1/4"	5/8"	3/8"	1/4"	500	1125	5 Max.
	AN-1413	1/4"	1 3/8"	1"	3/8"	2080	1125	5 Max.
	AN-1422	1/4"	2 1/4"	1"	1 1/4"	2080	1125	5 Max.
HEX NUT	HN-1614	5/16"	1 1/2"	1"	1/2"	2540	1950	10-15
	HN-1624	5/16"	2 1/2"	1"	1 1/2"	2540	1950	10-15
	• HN-3817	3/8"	1 7/8"	1 1/4"	5/8"	3600	3000	20-35
	• HN-3830	3/8"	3"	1 1/4"	1 3/4"	3600	3000	20-35
	• HN-1222	1/2"	2 1/4"	1 1/2"	3/4"	5330	4300	35-50
	• HN-1230	1/2"	3"	1 1/2"	1 1/2"	5330	4300	35-50
	• HN-5822	5/8"	2 1/4"	2"	1 1/4"	7200	7500	50-75
	• HN-5842	5/8"	4 1/4"	2"	2 1/4"	7200	7500	50-75
	• HN-5860	5/8"	6"	2"	4"	7200	7500	50-75
	• HN-3424	3/4"	2 1/2"	2"	1 1/2"	9200	11500	75-100
	• HN-3440	3/4"	4"	2"	2"	9200	11500	75-100
	• HN-3456	3/4"	5 3/4"	2"	3 3/4"	9200	11500	75-100
FLAT HEAD	FS-1411	1/4"	1 1/8"	3/4"	3/8"	500	1125	5 Max.
	FS-1420	1/4"	2"	1"	1"	2080	1125	5 Max.
	FS-1430	1/4"	3"	1"	2"	2080	1125	5 Max.
	FS-1440	1/4"	4"	1"	3"	2080	1125	5 Max.
	FS-1452	1/4"	5 1/4"	1"	4 1/4"	2080	1125	5 Max.
	FS-1624	5/16"	2 1/2"	1"	1 1/2"	2540	1950	10-15
	FS-1634	5/16"	3 1/2"	1"	2 1/2"	2540	1950	10-15
	FS-3826	3/8"	2 3/4"	1 1/4"	1 1/2"	3600	3000	20-35
	FS-3840	3/8"	4"	1 1/4"	2 3/4"	3600	3000	20-35
	FS-3850	3/8"	5"	1 1/4"	3 3/4"	3600	3000	20-35
	FS-3860	3/8"	6"	1 1/4"	4 3/4"	3600	3000	20-35
THRESHOLD FLAT HEAD	TH-1420	1/4"	2"	1"	1"	2080	1125	5 Max.
PHILLIPS FLAT HEAD	PF-1420	1/4"	2"	1"	1"	2080	1125	5 Max.
	PF-1430	1/4"	3"	1"	2"	2080	1125	5 Max.
ROUND HEAD	RS-1411	1/4"	1 1/8"	3/4"	3/8"	500	1125	5 Max.
	RS-1420	1/4"	2"	1"	1"	2080	1125	5 Max.
	RS-1426	1/4"	2 3/4"	1"	1 3/4"	2080	1125	5 Max.
	RS-1436	1/4"	3 1/2"	1"	2 3/4"	2080	1125	5 Max.
	RS-1623	5/16"	2 3/8"	1"	1 3/8"	2540	1950	10-15
	RS-1633	5/16"	3 3/8"	1"	2 3/8"	2540	1950	10-15
	RS-3824	3/8"	2 1/2"	1 1/4"	1 1/4"	3600	3000	20-35
	RS-3836	3/8"	3 3/4"	1 1/4"	2 1/2"	3600	3000	20-35
PHILLIPS ROUND HEAD	PR-1420	1/4"	2"	1"	1"	2080	1125	5 Max.
	PR-1426	1/4"	2 3/4"	1"	1 3/4"	2080	1125	5 Max.
STUD BOLT	SB-1423	1/4"	2 3/8"	1 3/8"	3/4"	2080	1125	5 Max.
	• SB-1624	5/16"	2 1/2"	1 1/2"	3/4"	2540	1950	10-15
	• SB-3827	3/8"	2 1/2"	1 7/8"	3/4"	3600	3000	20-35
	• SB-1232	1/4"	3 1/4"	2 1/4"	3/4"	5330	4300	35-50
• SB-5842	5/8"	4 1/4"	2"	2"	2"	7200	7500	50-75
TIE WIRE	TW-1614	5/16"	1 1/2"	1 1/2"	1/4" hole	2540	1950	10-15
MULTIPLE USE ANCHOR	SA-1625	5/16"	1 1/2"	1"	Threaded Rod Size 1/4"	2540	1950	10-15
	• SA-1237	1/2"	2 1/4"	1 1/2"	3/8"	5330	4300	35-50
	• SA-5850	5/8"	2 1/4"	2"	1 1/2"	7200	7500	50-75
FILLER SLEEVE	160-F	5/16"	1 1/8"					
	120-F	1/2"	5/8"					
	581-F	5/8"	2"					

stainless steel sleeve anchors

Heads only are made of Stainless Steel.

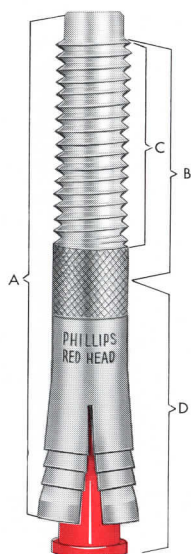
STAINLESS FLAT HEAD	FF-1420	1/4"	2"	1"	1"	2080	1125	5 Max.
	FF-1624	5/16"	2 1/2"	1"	1 1/2"	2540	1950	10-15
STAINLESS THRESHOLD	TT-1411	1/4"	1 1/8"	3/4"	3/8"	500	1125	5 Max.
	TT-1420	1/4"	2"	1"	1"	2080	1125	5 Max.
STAINLESS ROUND HEAD	RR-1420	1/4"	2"	1"	1"	2080	1125	5 Max.



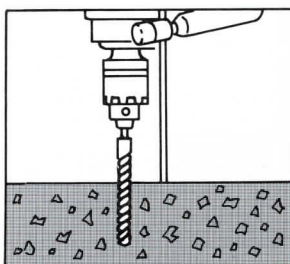
stud anchors

- Anchor size equals hole size permitting installation through the object being fastened.
- Can be installed without cleaning the hole.
- Dependable load capacity due to the same expansion principle as the RED HEAD Self-Drilling Anchor.
- Provides full capacity regardless of the amount of torque on the nut.
- Bottom bearing design permits use for jacking and leveling applications.

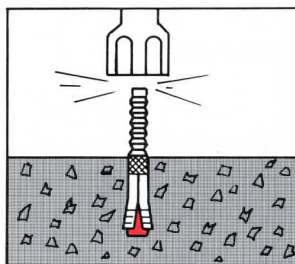
The Stud Anchor is another innovative anchor pioneered by Phillips. It offers a fast and easy fastener system when combined with the 606 Hammer Drill for the smaller sizes. The larger sizes are best installed in holes drilled with the 747 Roto Stop Hammer.



1. DRILL HOLE
Drill hole to indicated depth.



2. EXPAND ANCHOR Insert anchor and expand with hammer. Setting tools are available for smaller sizes.



INSTALLATION



Catalog Number	Hole Size & Drill Size	A Overall Length	B Stud Length	C Thread Length	D		* Load Capacity in 3,500 P.S.I. Concrete, Lbs.	
					Floor/Wall	Ceiling	Pullout	Shear
JS-14C JS-14H JS-14M	1/4"	1 3/4" 2 1/4" 3 1/4"	3/4" 1 1/8" 2 1/8"	5/8" 7/8" 7/8"	1 5/8"	1 3/8"	2400	2110
• JS-38C • JS-38H • JS-38M	3/8"	2 1/4" 3" 3 3/4"	1" 1 5/8" 2 1/4"	3/4" 1 1/4" 1 1/4"	1 7/8"	1 5/8"	3550	4500
• JS-12C • JS-12H • JS-12M	1/2"	2 3/4" 4 1/4" 5 1/4"	1 1/8" 2 1/2" 3 5/8"	7/8" 2" 2"	2 1/4"	1 7/8"	5200	7700
• JS-58C • JS-58H • JS-58M	5/8"	3 3/8" 5" 7"	1 3/8" 3" 5"	7/8" 2" 2 1/2"	2 3/4"	2 3/8"	7100	11,700
• JS-34C • JS-34H • JS-34M	3/4"	4 1/4" 6 1/4" 8 1/2"	1 3/4" 3 3/4" 6"	1 3/8" 2 1/2" 2 1/2"	3 1/4"	2 7/8"	11,100	16,200

*Based on Independent Testing Laboratory tests. Report available on P. 22.

Tests conducted in stone aggregate concrete.

For manufacturers recommended safe working loads use 25% of above load values.

Meets or exceeds U.S. Government G.S.A. Specification FF-S-325, Group VIII, Type 2.

STUD ANCHOR SETTING TOOLS



Setting Tool Cat. No.	Stud Catalog Number
JX-14 JX-38	JS-14 JS-38

For installation in structural light weight concrete use 70% of load values.

NOTE: Maintain an accurate hole size for proper installation and performance.

• Listed by ICBO

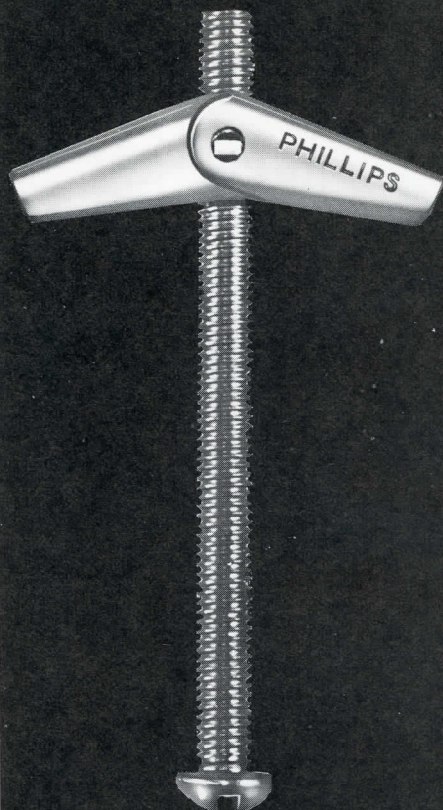
ICBO (See Research Recommendation No. 1372 of the International Conference of Building Officials.)

toggle bolts

Spring wing type for hollow walls and ceilings.

ALL STEEL CONSTRUCTION

- **Heavy gauge wings ... high capacity truss design.**
- **Durable music wire spring ... positive spring wing action.**
- **Easy tightening under load ... no binding on screw.**
- **Locked in pivot nut ... can't fall out.**



TOGGLE WINGS ONLY

Catalog Numbers	Bolt Sizes	Drill Size
TG-180	1/8"	3/8"
TG-360	3/16"	1/2"
TG-140	1/4"	5/8"
TG-560	5/16"	7/8"
TG-380	3/8"	7/8"

Catalog Number		Bolt Size	Drill Size
Round Head	Mushroom Head		
	TM-1820	1/8" x 2"	3/8"
	TM-1830	1/8" x 3"	3/8"
	TM-1840	1/8" x 4"	3/8"
TR-3620		3/16" x 2"	1/2"
TR-3630	TM-3630	3/16" x 3"	1/2"
TR-3635		3/16" x 3 1/2"	1/2"
TR-3640	TM-3640	3/16" x 4"	1/2"
TR-3650		3/16" x 5"	1/2"
TR-3660		3/16" x 6"	1/2"
TR-1430	TM-1430	1/4" x 3"	5/8"
TR-1435		1/4" x 3 1/2"	5/8"
TR-1440	TM-1440	1/4" x 4"	5/8"
TR-1450		1/4" x 5"	5/8"
TR-1460		1/4" x 6"	5/8"
TR-5630		5/16" x 3"	7/8"
TR-5640		5/16" x 4"	7/8"
TR-5650		5/16" x 5"	7/8"
TR-5660		5/16" x 6"	7/8"
TR-3830		3/8" x 3"	7/8"
TR-3840		3/8" x 4"	7/8"
TR-3850		3/8" x 5"	7/8"
TR-3860		3/8" x 6"	7/8"

Meets or exceeds U.S. Government Specifications
No. FF-B-588C Type 1, Class A, Style 1 (Dated 3/29/71)

lead calking anchors

OPEN BOTTOM

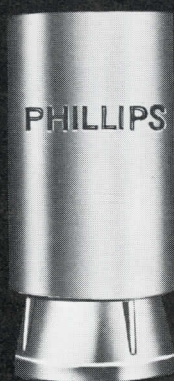
- **High quality materials ... assure dependable strength and corrosion resistance.**
- **Versatile ... Ideal for use with machine screws and bolts in soft or shallow masonry.**

A CALKING TOOL IS PACKED IN EACH BOX OF LEAD ANCHORS

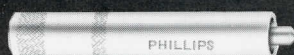
Catalog Number	Bolt Size	Drill Size	Minimum Hole Depth	Calking Tool Catalog No.
LD-632	#6-32	5/16"	1/2"	CT-632
LD-832	#8-32	5/16"	1/2"	CT-832
LD-102	#10-24	3/8"	5/8"	CT-102
LD-122	#12-24	1/2"	7/8"	CT-122
LD-140	1/4" - 20	1/2"	7/8"	CT-140
LD-516	5/16" - 18	5/8"	1"	CT-516
LD-380	3/8" - 16	3/4"	1 1/4"	CT-380
LD-120	1/2" - 13	7/8"	1 1/2"	CT-120
LD-580	5/8" - 11	1 1/8"	1 1/2"	CT-580
LD-340	3/4" - 10	1 1/4"	1 5/8"	CT-340

Meets or exceeds U.S. Government Specification No. FF-S-325 Group 1, Type 1, Class 1
(Dated 9/10/57)

NOTE: Maintain an accurate hole size for proper installation and performance.



CALKING TOOL



For fast, accurate installation of lead calking anchors. A calking tool is provided in every box of anchors at no additional charge.



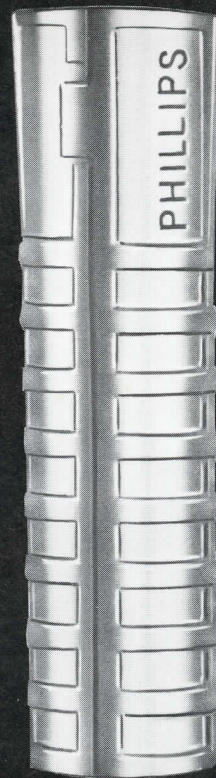
lag shield

with the exclusive RED HEAD design

- **Four directional expansion ... New improved design develops scissor type action and separates when lag screw is inserted for greater expansion holding power.**
- **RED HEAD waffle cast pattern ... Outer waffle surface with annular rings creates a superior holding pattern.**
- **Versatile ... Used in all types of masonry ... available in long and short length types.**

Catalog Number	Bolt Size	Drill Size	Drill Depth
Short	LS-140	1/4"	1 1/4"
	LS-160	5/16"	1 1/2"
	LS-380	3/8"	2"
	LS-120	1/2"	2 1/4"
	LS-580	5/8"	2 1/4"
	LS-340	3/4"	2 1/4"
Long	LS-146	1/4"	1 3/4"
	LS-166	5/16"	2"
	LS-386	3/8"	2 3/4"
	LS-126	1/2"	3 1/4"
	LS-586	5/8"	3 3/4"
	LS-346	3/4"	3 3/4"

Lag shields meet or exceed U.S. Government Specification No. FF-S-325 Group II, Type 1, Class 1 (long) and Class 2 (short), (Dated 9/10/57).



flange plastic anchors

...and anchor kits

...for fastening light weight fixtures to plaster, wall board, concrete, stone, brick and block.

- **Strong, durable and dependable ... won't mildew or rot.**
- **Improved flange holds anchor in place during installation.**
- **Versatile ... uses wood screws or sheet metal screws.**

Ideal for fastening cabinets, mirrors, curtains, pictures, mail boxes, signs, bathroom fixtures and shelf brackets.

Catalog Number	Anchor Size	Tapping Screw	Drill Size	Drill Depth
FP-0806K	(100) 8-10x3/4"	(100) 8x1"	(1) 3/16"	1"
FP-1010K	(100) 10-12x1"	(100) 10x1 1/4"	(1) 1/4"	1 1/4"

Kits come complete with Screws and Carbide Tipped Drill.

Catalog Number	Drill Diameter	Anchor Size	Drill Depth
FP-0806 *	3/16"	6-8-10x3/4"	1"
FP-1010 *	1/4"	10-12x1"	1 1/4"

*Screws and Drill not included.



CARBIDE DRILL BITS

Catalog Number	Size
D-164	3/16" x 4"
D-144	1/4" x 4"

NOTE: Maintain an accurate hole size for proper installation and performance.



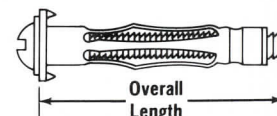


hollow wall and hollow wall drive anchors

Hollow wall anchors are designed for use in hollow wall applications such as plaster, wallboard, cinder block, cement block, hollow tile, glazed tile, marble metal, plywood paneling, glass, etc. Hollow wall drive anchors are designed primarily for plaster and dry wall applications.

HOLLOW WALL ANCHORS

Catalog Number	Size	Drill Size	Grip Range	Overall Length
WA-18XS	1/8XS	5/16"	up to 1/4"	1"
WA-18S	1/8S	5/16"	1/8"-5/8"	1 1/2"
WA-18L	1/8L	5/16"	5/8"-1 1/4"	1 5/16"
WA-18XL	1/8XL	5/16"	1 1/2"-1 3/4"	2 1/16"
WA-36S	3/16S	7/16"	1/8"-5/8"	2 1/4"
WA-36L	3/16L	7/16"	5/8"-1 1/4"	2 3/4"
WA-36XL	3/16XL	7/16"	1 1/4"-1 3/4"	3 1/2"
WA-14S	1/4S	1/2"	1/8"-5/8"	2 1/4"
WA-14L	1/4L	1/2"	5/8"-1 1/4"	2 3/4"
WA-14XL	1/4XL	1/2"	1 1/4"-1 3/4"	3 1/2"



HOLLOW WALL DRIVE ANCHORS

Catalog Number	Size	Grip Range
WD-18DXS	1/8DXS	0-3/8"
WD-18DS	1/8DS	1/8"-5/8"
WD-18DL	1/8DL	1/8"-7/8"

A friction wrench is provided in each box.

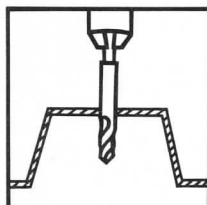
A friction wrench is provided in each box.

HOLLOW WALL ANCHOR HOLLOW WALL DRIVE ANCHOR

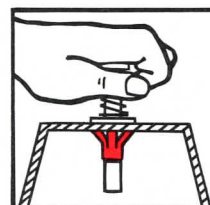
steel deck inserts

This is the fastener you use in steel deck before you pour concrete. It replaces threaded rods held in place by nuts, reinforced eye bolts welded to the decking and malleable iron inserts. RED HEAD Steel Deck Inserts will reduce material costs, and cut installation costs as well. Steel Deck Inserts can be installed in seconds, and are available in a variety of sizes to fit every structural requirement.

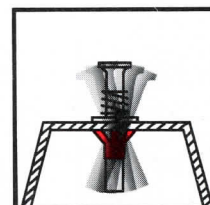
INSTALLATION



1. Drill, punch or burn a hole through the deck.



2. Snap insert through the deck. (clip will expand on bottom side of deck)



3. Kick it, step on it, it bounces back. Red Head has broken into steel frame construction with something new... an easily installed insert designed to take the abuses of construction activities on the deck before the concrete is poured.



STEEL FLOOR DECK INSERTS Load Table

* For manufacturers safe working loads use 25% of load values.

			* Load Capacity in 3,500 P.S.I. Concrete, Lbs.			
			Lightweight Aggregate		Stone Aggregate	
Catalog Number	Rod Size	Size Drill	Through Rib	Between Rib	Through Rib	Between Rib
• SDI-3822	3/8"	9/16"	2960	5440	4800	5400
• SDI-1222	1/2"	1 1/16"	2960	5440	4800	8000
• SDI-5822	5/8"	25/32"	2960	6800	4800	10,200
• SDI-5822-34	3/4"	25/32"	2960	6800	4800	10,200

** ICBO (See Research Recommendation No. 1372 of the International Conference of Building Officials.)



Catalog Number	Diameter	Overall Length	Shank Diameter
DS-916	9/16"	6"	3/8"
DS-1116	1 1/16"	6"	3/8"
DS-2532	25/32"	6"	3/8"

Red Head offers a high speed drill bit developed to drill burr-free holes through thin steel deck material and to minimize tendency to "hang-up" when drilling large diameter holes in this material. Use it in any 3/8" or 1/2" drill.

Inserts for 3/8"-5/8" rod sizes come with internally-threaded couplings. These couplings have an easily removed plug to prevent fire-proofing materials from fouling the threads.



Inserts for 3/4" rod size have an externally threaded adapter to accept a standard rod coupling.

NOTE: Maintain an accurate hole size for proper installation and performance.

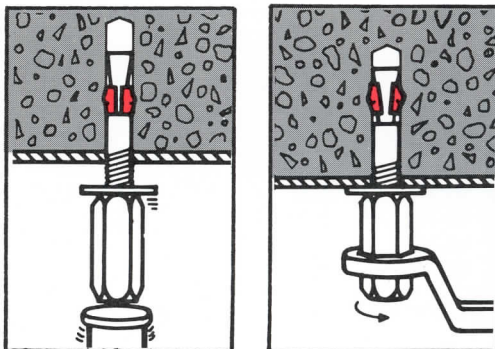


wedge rod anchors

Versatile high load carrying anchors for use in all types of steel deck floor construction. Installation in the rib or between ribs is quick and easy. Wedge Rod anchors are expanded into the concrete providing a dependable, heavy duty means for hanging equipment. Available in a variety of lengths and diameters with either through coupling nuts of the same diameter as the rod, or with step coupling nuts an eighth of an inch greater than the rod diameter. The RED HEAD 747 Roto Stop Hammer is ideally suited for fast, easy installation.

INSTALLATION

1. Drill hole (carbide tipped drill bit).
2. Tap Wedge Rod Anchor into the hole until coupling nut contacts the steel deck.
3. Expand anchor by tightening coupling nut with a wrench.




Follow these simple steps along with Tables I and II to determine the correct anchors for your deck application.

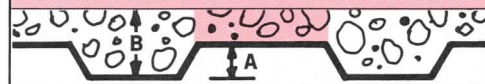
After determining whether your application is through rib or between rib, follow the respective Tables and list the answer.

1. Rod (or bolt) size _____
2. Rib depth _____
3. Slab thickness _____
4. Anchor Cat. No.(s) _____

RED HEAD® WEDGE ROD ANCHOR SELECTION TABLE I

For Threaded Rod Installation. NOTE: Anchors listed below will fit all size rib widths.

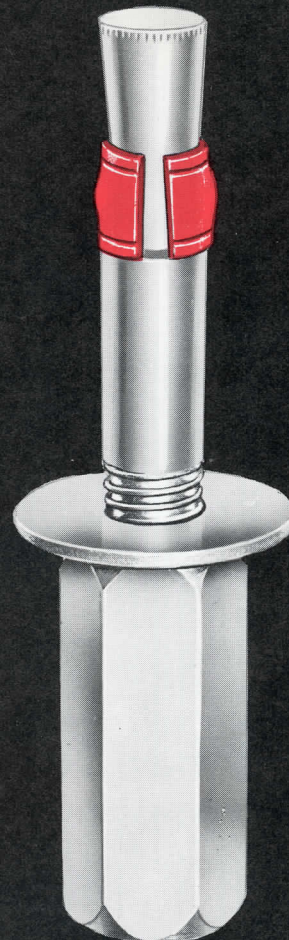
THROUGH RIB INSTALLATION				
				
RIB DEPTH 1-5/16" TO 2" (A)				
ROD SIZE	SLAB THICKNESS (B)			
	4 1/2"	5"	5 1/2"	6"
ANCHOR CAT. NO'S.				
1/4"	WR-1416	WR-1416	WR-1416	WR-1416
3/8"	WR-1416-38 WR-3836	WR-1416-38 WR-3836	WR-1416-38 WR-3836	WR-1416-38 WR-3836
1/2"	WR-3836-12 WR-1242	WR-3836-12 WR-1242	WR-3836-12 WR-1242	WR-3836-12 WR-1242
5/8"	WR-1242-58 WR-5842	WR-1242-58 WR-5842	WR-1242-58 WR-5842	WR-1242-58 WR-5842
3/4"	WR-5842-34 WR-3442	WR-5842-34 WR-3442	WR-5842-34 WR-3442	WR-5842-34 WR-3442
7/8"	WR-3442-78	WR-3442-78	WR-3442-78	WR-3442-78

BETWEEN RIB INSTALLATION				
				
RIB DEPTH 1-5/16" TO 2" (A)				
ROD SIZE	SLAB THICKNESS (B)			
	4 1/2"	5"	5 1/2"	6"
ANCHOR CAT. NO'S.				
1/4"	WR-1416	WR-1416	WR-1416	WR-1416
3/8"	WR-1416-38 WR-3822	WR-1416-38 WR-3822	WR-1416-38 WR-3822	WR-1416-38 WR-3822
1/2"	WR-3822-12	WR-3822-12 WR1226	WR-3822-12 WR1226	WR-3822-12 WR1226
5/8"		WR-1226-58	WR-1226-58 WR-5833	WR-1226-58 WR-5833
3/4"			WR-5833-34	WR-5833-34

RIB DEPTH 3" (A)				
ROD SIZE	SLAB THICKNESS (B)			
	5 1/2"	6"	6 1/2"	7 & 7 1/2"
ANCHOR CAT. NO'S.				
1/4"	WR-1416	WR-1416	WR-1416	WR-1416
3/8"	WR-1416-38 WR-3850	WR-1416-38 WR-3850	WR-1416-38 WR-3850	WR-1416-38 WR-3850
1/2"	WR-3850-12 WR-1252	WR-3850-12 WR-1252	WR-3850-12 WR-1252	WR-3850-12 WR-1252
5/8"	WR-1252-58 WR-5850	WR-1252-58 WR-5850	WR-1252-58 WR-5850	WR-1252-58 WR-5850
3/4"	WR-5850-34 WR-3442	WR-5850-34 WR-3442	WR-5850-34 WR-3442	WR-5850-34 WR-3442
7/8"	WR-3442-78	WR-3442-78	WR-3442-78	WR-3442-78

RIB DEPTH 3" (A)				
ROD SIZE	SLAB THICKNESS (B)			
	5 1/2"	6"	6 1/2"	7 1/2"
ANCHOR CAT. NO'S.				
1/4"	WR-1416	WR-1416	WR-1416	WR-1416
3/8"	WR-1416-38 WR-3822	WR-1416-38 WR-3822	WR-1416-38 WR-3822	WR-1416-38 WR-3822
1/2"	WR-3822-12	WR-3822-12 WR-1226	WR-3822-12 WR-1226	WR-3822-12 WR-1226
5/8"		WR-1226-58	WR-1226-58 WR-5833	WR-1226-58 WR-5833
3/4"			WR-5833-34	WR-5833-34
7/8"				WR-3442-78

NOTE: Maintain an accurate hole size for proper installation and performance.



WEDGE ROD ANCHORS LOAD TABLE II

Catalog Number	Anchor Size/Drill Size	Rod Size	Load Capacity In 3,500 P.S.I. Concrete, Lbs.		
			Light-weight Aggreg.	Stone Aggreg.	Min. Hole Depth
WR-1416	1/4"	1/4"	1600	2500	1 3/4"
WR-1416-38	1/4"	3/8"	1600	2500	1 3/4"
WR-3822	3/8"	3/8"	2400	3700	2 1/4"
WR-3822-12	3/8"	1/2"	2400	3700	2 1/4"
WR-3836	3/8"	3/8"	2400	3700	3 3/4"
WR-3836-12	3/8"	1/2"	2400	3700	3 3/4"
WR-3850	3/8"	3/8"	2400	3700	5"
WR-3850-12	3/8"	1/2"	2400	3700	5"
WR-1226	1/2"	1/2"	3900	6000	2 3/4"
WR-1226-58	1/2"	5/8"	3900	6000	2 3/4"
WR-1242	1/2"	1/2"	3900	6000	4 1/4"
WR-1242-58	1/2"	5/8"	3900	6000	4 1/4"
WR-1252	1/2"	1/2"	3900	6000	5 1/4"
WR-1252-58	1/2"	5/8"	3900	6000	5 1/4"
WR-5833	5/8"	5/8"	5100	8000	3 3/8"
WR-5833-34	5/8"	3/4"	5100	8000	3 3/8"
WR-5842	5/8"	5/8"	5100	8000	4 1/4"
WR-5842-34	5/8"	3/4"	5100	8000	4 1/4"
WR-5850	5/8"	5/8"	5100	8000	5"
WR-5850-34	5/8"	3/4"	5100	8000	5"
WR-3442	3/4"	3/4"	6200	9300	4 1/4"
WR-3442-78	3/4"	7/8"	6200	9300	4 1/4"

For manufacturers recommended safe working loads use 25% of above load values.

Meets or exceeds U.S. Government G.S.A. Specifications FF-S-325 Group II, Type 4, Class 1. Interim Amendment-3. (Dated 4/16/65)

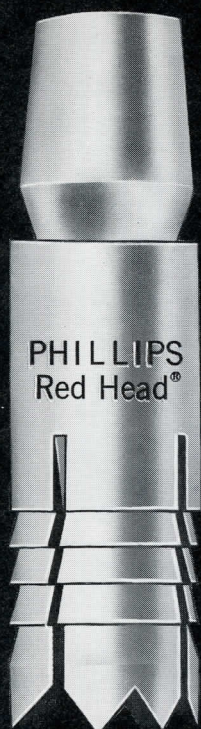
Load values listed above apply only to installations in steel floor deck construction. For all other type concrete construction, refer to load values listed in this catalog.



ICBO (See Research Recommendation No. 1372 of the International Conference of Building Officials.)

self-drilling anchors & self-drilling pins

The Self-Drilling anchor can now drill through both steel deck and concrete. This is possible because of an exclusive reusable RED HEAD Self-Drilling Pin made of hardened steel. The pin, inserted into the anchor acts as a center punch to guide the teeth through the steel decking. For best results install RED HEAD Self-Drilling anchors with the 747 Roto-Stop Hammer.



The exclusive
RED HEAD
Self-Drilling Pin

**SELF-DRILLING ANCHOR
LOAD TABLE II**

Self-drilling Anchor Cat. No.	Rod Size	Self-drilling Pin Cat. No.	Load Capacity In 3,500 P.S.I. Concrete, Lbs.	
			Light- weight Aggreg.	Stone Aggreg.
S-14	1/4"	No pin required	2200	3,500
S-38	3/8"	SDP-38	3500	4,900
S-12	1/2"	SDP-12	5200	7,400
S-58	5/8"	SDP-58	6900	10,100
S-34	3/4"	SDP-34	8800	14,100

For manufacturers recommended safe working loads use 25% of above load values.
Meets or exceeds U.S. Government G.S.A. Specifications No. FF-S-325, Group III, Type 1. (Dated 9/10/57)

Load values listed above apply only to installations in steel floor deck construction. For all other type concrete construction, refer to load values listed in this catalog.

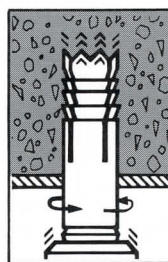
Listed by

ICBO (See Research Recommendation No. 1372 of the International Conference of Building Officials.)

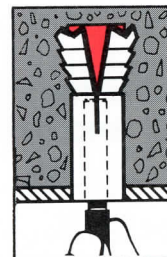
INSTALLATION



1. Using the Self-Drilling Pin as a center guide, cut through the steel deck.



2. Remove the pin and continue drilling into the concrete.



3. Expand anchor over the hardened steel plug, using impact only. Snap off cone for flush installation. Check full expansion of anchor by inserting blunt end of self-drilling pin into anchor. If fully expanded...groove on pin will align with flush end of anchor.

Follow these simple steps along with Tables I and II to determine the correct anchors for your deck application.

After determining whether your application is through rib or between rib, follow the respective Tables and list the answer.

- Rod (or bolt) size _____
- Rib depth _____
- Slab thickness _____
- Anchor Cat. No.(s) _____

RED HEAD® SELF-DRILLING ANCHOR SELECTION TABLE I

Flush Installation For Threaded Rod or Bolts. **NOTE:** If width of deck rib is less than 4 1/2", installation must be made between ribs. If width of deck rib is more than 4 1/2", installation can be made either through or between ribs.

THROUGH RIB INSTALLATION				
RIB DEPTH 1-5/16" TO 2" (A)				
ROD OR BOLT SIZE	SLAB THICKNESS (B)			
	4 1/2"	5"	5 1/2"	6"
ANCHOR (S) & PIN (SDP) CAT. NO'S.				
1/4"	S-14	S-14	S-14	S-14
3/8"	S-38 SDP-38	S-38 SDP-38	S-38 SDP-38	S-38 SDP-38
1/2"	S-12 SDP-12	S-12 SDP-12	S-12 SDP-12	S-12 SDP-12
5/8"		S-58 SDP-58	S-58 SDP-58	S-58 SDP-58
3/4"			S-34 SDP-34	S-34 SDP-34

BETWEEN RIB INSTALLATION				
RIB DEPTH 1-5/16" TO 2" (A)				
ROD OR BOLT SIZE	SLAB THICKNESS (B)			
	4 1/2"	5"	5 1/2"	6"
ANCHOR (S) & PIN (SDP) CAT. NO'S.				
1/4"	S-14	S-14	S-14	S-14
3/8"		S-38 SDP-38	S-38 SDP-38	S-38 SDP-38
1/2"			S-12 SDP-12	S-12 SDP-12
5/8"				S-58 SDP-58

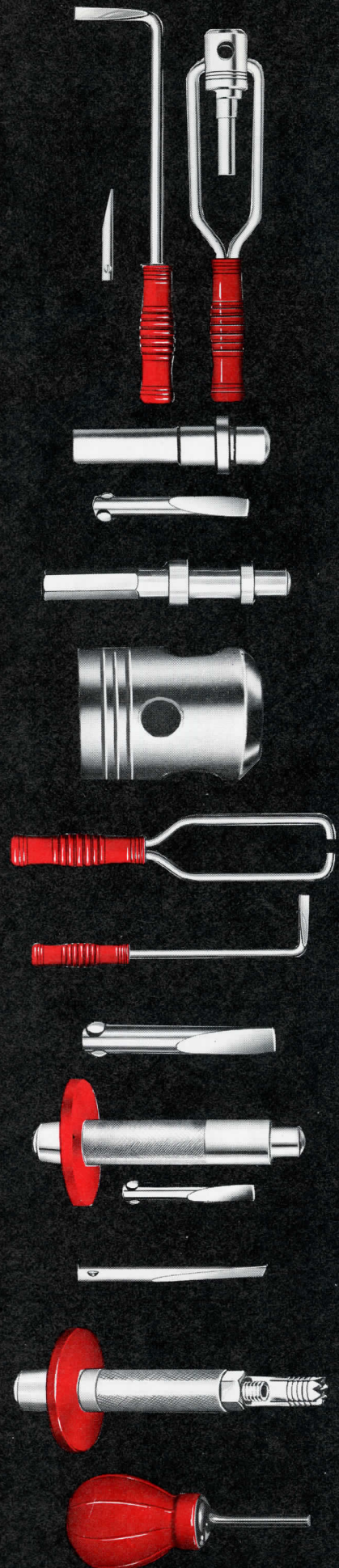
RIB DEPTH 3" (A)				
ROD OR BOLT SIZE	SLAB THICKNESS (B)			
	5 1/2"	6"	6 1/2"	7 & 7 1/2"
ANCHOR (S) & PIN (SDP) CAT. NO'S.				
1/4"	S-14	S-14	S-14	S-14
3/8"	S-38 SDP-38	S-38 SDP-38	S-38 SDP-38	S-38 SDP-38
1/2"	S-12 SDP-12	S-12 SDP-12	S-12 SDP-12	S-12 SDP-12
5/8"	S-58 SDP-58	S-58 SDP-58	S-58 SDP-58	S-58 SDP-58
3/4"	S-34 SDP-34	S-34 SDP-34	S-34 SDP-34	S-34 SDP-34

RIB DEPTH 3" (A)				
ROD OR BOLT SIZE	SLAB THICKNESS (B)			
	5 1/2"	6"	6 1/2"	7" 7 1/2"
ANCHOR (S) & PIN (SDP) CAT. NO'S.				
1/4"	S-14	S-14	S-14	S-14
3/8"		S-38 SDP-38	S-38 SDP-38	S-38 SDP-38
1/2"			S-12 SDP-12	S-12 SDP-12
5/8"				S-58 SDP-58



self-drilling anchor accessories

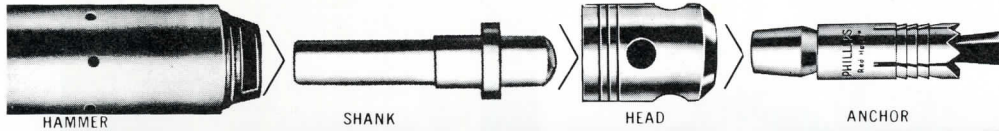
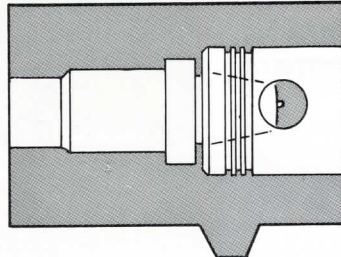
Complete chuck assembly for Air or Electric Impact Hammer installation with Chuck Head, Hammer Shank, Handle, Ejector Key and Shank Drift Pin.		Catalog Number	Size
		See chuck ordering data on Page 17 for Catalog Number	1/4 " 5/16 " 3/8 " 1/2 " 5/8 " 3/4 " 7/8 "
PARTS FOR CHUCK ASSEMBLY	Round Hammer Shank and Drift Pin	See chuck ordering data on Page 17 for Catalog Number	Fits all HL-Type chuck heads
	Special Hammer Shank and Drift Pin		
	FOR HAMMERS NOT LISTED ON PAGE 17		
	Chuck head with 1/2 " ejector holes	HL-14 HL-16 HL-38 HL-12 HL-58 HL-34 HL-78	1/4 " 5/16 " 3/8 " 1/2 " 5/8 " 3/4 " 7/8 "
	Chuck Handle with Rubber Grip	H-128	Fits all HL-Type chuck heads
	Anchor Ejector Key	EK-12 (Formerly EK-6)	For use with above chuck assy.
	Shank Drift Pin Use with Shanks and Holder/Drivers	X-158	Used for separating chuck head from shank
PARTS FOR SH-300K HAND KITS	SH-300 Holder/Driver	SH-300	Fits all chuck heads
	Anchor Drift Pin	Z-287	Fits chuck heads with 1/2 " ejector holes
FH-300 Flush/Holders Use with Flush Anchors		FH-314 FH-316 FH-338 FH-312 FH-358 FH-334 FH-378	1/4 " 5/16 " 3/8 " 1/2 " 5/8 " 3/4 " 7/8 "
Blow-out Bulb		BB10	Used to remove debris from hole





interchangeable hammer chucks

Complete Interchangeability is achieved with Adapter Shanks for most makes and models of Impact Hammers. Uniform dimensions and taper permit perfect mating with any size Phillips Chuck Head.



TO ORDER COMPLETE CHUCK ASSEMBLIES

Find Chuck Assembly Catalog Number according to Make and Model of your Hammer.
Be sure to specify size of RED HEAD being installed.

EXAMPLE

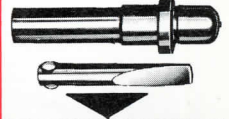
For installing S-38 RED HEADS with Black & Decker Hammer Model 104-1, order Chuck Assembly CA-10-3/8".



TO ORDER HAMMER ADAPTER SHANKS ONLY

Find Hammer Shank Catalog Number according to make and model of your Hammer.

(Shank Drift Pin X-158 included without charge.)



Hammer Make	Models	Anchor Size Capacity	Complete Chuck Assembly Catalog Number	Chuck Shank Catalog Number
A.E.G.	BH-25	1/4-1/2	CA-160	S-160
Black & Decker	102; 5010	1/4-1/2	CA-80	S-80
" "	103; 103-1; 5015	1/4-5/8	"	"
" "	104; 104-1; 5020	All Sizes	CA-10	S-10
" "	105; 109; 5025	1/2-7/8	CA-260	S-260
" "	717; 719; 5050	All Sizes	CA-75	S-75
" "	718; 5045	1/4-3/4	"	"
" "	723; 5055	All Sizes	CA-22	S-22
" "	5040	1/4-1/2	CA-11	S-11
Bosch (Homelite)	11201	1/4-1/2	CA-90	S-90
Chicago Pneumatic	840 (Also Bulldog)	1/4-5/8	CA-170	S-170
(Consolidated Pneumatic)	930	All Sizes	CA-10	S-10
" "	V-2; O-RV; 1-RV	1/4-5/8	CA-140	S-140
" "	2-RV; 3-RV; & 4-RV	All Sizes	"	"
" "	0-Simplate; 1-Simplate	1/4-5/8	"	"
" "	2-Simplate; 2A; 3; 4-Simplates	All Sizes	"	"
" "	Baby & 1-Boyer Superior	1/4-5/8	"	"
" "	2-Boyer Superior; 3-Boyer Superior	All Sizes	"	"
" "	CP-9	All Sizes	CA-290	S-290
" "	CP-9RR	"	"	S-290R
" "	CP-14	3/8-7/8	CA-240	S-240
Cleco	E-2 Riveter	1/4	CA-356	S-356
" "	E-3; E-4; E-5 Riveters	1/4-3/8	"	"
" "	0W; 1W	1/4-5/8	CA-140	S-140
" "	2W; 2WA; 3W; 3WA	All Sizes	"	"
Cleveland (LeRoi)	CD-8	3/8-7/8	CA-350	S-350
Gardner-Denver	1-X; 2; 2-X; 3	All Sizes	CA-140	S-140
(Keller Tool Div.)	S17-HD; S17-HT; S-33; S-48	1/2-7/8	CA-240	S-240
Holman Pneumatic	BC-0; BC-00; BC-000; BC-2	1/4-3/4	CA-140	S-140
" "	NC-1; NC-2; NC-3; NC-4	All Sizes	"	"
Homelite	See Bosch	"	"	"
Ingersoll Rand	H54-1U	All Sizes	CA-340	S-340
" "	MC-12C; MC-121	1/4-1/2	CA-356	S-356
" "	HS-625U; HS-650-U	All Sizes	CA-8A	S-8A
" "	K-1; K-2	1/4-1/2	CA-170	S-170
" "	1; E-1; S-1	1/4-5/8	CA-140	S-140
" "	300	1/4-3/4	CA-10	S-10
" "	2; E-2; S-2	1/2-3/4	"	"
" "	2A; E-2A; S-2A; 3; E-3; S-3; 4; E-4; S-4	All Sizes	CA-140	S-140
" "	400	3/8-7/8	CA-356	S-356
" "	AVG-12	1/4-3/8	CA-240	S-240
" "	J-10	3/8-7/8	CA-3	S-3
" "	750	3/8-7/8	CA-140	S-140
Kango	1; 2E; 3E; 4E	All Sizes	"	"
Master Power	1R	3/8-7/8	CA-90	S-90
Master Vibrator	1130	1/4	CA-100	S-100
Metabo	1716	All Sizes	CA-340	S-340
Millers Falls	1720	All Sizes	CA-8A	S-8A
" "	SP-499 K	All Sizes	CA-100	S-100
Millers Falls	2516; 2906; 3216; 3906	3/8-7/8	CA-30	S-30
Milwaukee	5360; H-834; H-856	1/4-3/4	CA-50	S-50
" "	5350	1/4-1/2	CA-440	S-440
" "	5300	All Sizes	CA-400	S-400
Phillips	K-457	All Sizes	"	S-47
" "	747	All Sizes	"	"
Porter Cable	See Kango	"	"	"
Rockwell-Kango	602; 605	All Sizes	CA-8A	S-8A
" "	607	3/8-7/8	CA-3	S-3
" "	608	All Sizes	CA-8A	S-8A
Rotor Tool	C-10; C-15	1/4-3/4	CA-140	S-140
" "	C-20; C-25; C-30	All Sizes	"	"
Skil	706; 1706	1/4-1/2	CA-9	S-9
" "	726	1/4-3/4	CA-440	S-440
" "	728; 729	All Sizes	CA-8	S-8A
" "	736; 737	3/8-7/8	CA-465	S-465
" "	736 Type No. 5 Nose	3/8-7/8	CA-465-2	S-465-2
" "	437	All Sizes	CA-10	S-10
" "	1160; 1165	1/4-5/8	CA-356	S-356
Syntro	16; 22	All Sizes	CA-100	S-100
" "	25	3/8-7/8	"	"
Thor	U-100	All Sizes	CA-170	S-170
" "	00; 11	1/4-3/4	CA-140	S-140
" "	22; 33; 44	All Sizes	"	"
" "	15; 15DLK	3/8-7/8	CA-240	S-240
Wodak	MXDH	All Sizes	CA-60	S-60

For special hammer shanks for tools not listed above, contact your nearest RED HEAD® warehouse.



747 roto stop hammer

sets a new standard for
versatility in Rotary Hammers.



Built-in stop rotation mechanism permits hammering with or without rotation by merely flipping the ROTO STOP control. Tackles more drilling jobs more efficiently than any other rotary impact tool.

The RED HEAD 747 Roto Stop Hammer is actually 3 tools in one! Use it with carbide bits for high speed concrete drilling. Flip a lever and unique stop rotation mechanism allows you to install Self-Drilling Anchors. Hammer tools also available for chipping, scaling or breaking.

- **UNIQUE SAFETY CLUTCH**...Disengages rotation...no twisting, jerking or kicking when binding load is encountered...automatically re-engages when load is relieved.
- **NO CLUTCH WEAR, NEVER NEEDS ADJUSTING.**
- **IMPACT MECHANISM**...advanced double air cushion design...no seals to wear, maintenance free, long life.
- **EXCLUSIVE DUST SHIELD**...For overhead drilling. Slips on at operator's convenience without obstructing vision.
- **LIGHTWEIGHT**...Delivers more power per pound...correctly balanced for easy handling.
- **AUTOMATIC ELECTRICAL SHUT-OFF**...Prevents armature damage. Signals regreasing and general maintenance.

747

with Steel carrying case includes: Custom designed removable auxiliary handle with extension, Chuck shank and 1/4", 3/8", 1/2", 5/8" and 3/4" chuck heads for installation of RED HEAD Self-Drilling Anchors, Depth gauge for use with carbide bits, Dust shield for overhead drilling, Allen wrench, Ejector key, Drift pin and Blow-out Bulb.

747-30

with Steel carrying case includes: Depth gauge, Auxiliary handle with extension and Allen wrench.



Efficient rotary
impact drilling with
carbide tipped
bits and core bits.



LISTED BY



SPECIFICATIONS

AMPS: 9

VOLTS: 115 A.C. 60 cycles

MOTOR: Universal

BPM: 2850 Blows Per Minute

RPM: 330 under load

WEIGHT: 13.2 lbs.

LENGTH: 13 3/4"

CAPACITIES:

RED HEAD Self-Drilling Anchors:
1/4" through 7/8"

Carbide tipped drills: 1/4"-1 1/4"

Carbide tipped core drills:
up to 2 5/8"

CONSTRUCTION:

Electrical: Rugged, heavy duty components designed for long life, high performance.

Mechanical: Machined steel gears, precision ball and roller bearing construction, advanced air cushion impact mechanism.

Housing: Rugged...high impact fiber glass polymer with cast aluminum frame.

Cord: 13' long type SJ with molded upper strain relief and three wire grounded molded plug.

747 roto stop kit and accessories



**the 747
roto stop
hammer kit
contains...**

Description	Catalog Number
Roto Stop Hammer	747
Carrying Case	7052
Handle Extension	7050
Depth Gauge	7046
Dust Shield	7053
Allen Wrench	7047
Blow Out Bulb	BB10
Ejector Key	EK12
Drift Pin	DAB-P
Chuck Shank	S-47
And Chuck Heads	RH-514, RH-538, RH-512, RH-558, RH-534



Hex Carbide Tipped Drill Bits



"A" Taper Carbide Bits



"B" Taper Carbide Bits



"A" Taper Shank Adaptor with Drift Pin

"B" Taper Shank Adaptor with Drift Pin

Drift Pin Only



Cold Chisel Hammering Tool



Bull Point Hammering Tool



Carbide Core Bits

(Drift Pin DAB-P)

Carbide Core Bit Adaptor Shank

Carbide Core Bit Starter Drills



Shank and Drift Pin for the 747 Hammer



Chuck Heads

Catalog Number	Diameter	Useable Drilling Length	Over-All Length
DH2-126 DH2-1216 DH2-586 DH2-5816 DH2-346 DH2-3416 DH2-786 DH2-7816 DH2-16 DH2-116 DH2-1186 DH2-11816 DH2-1146 DH2-11416		$\frac{1}{2} \times 6 \times 10\frac{1}{2}$ $\frac{1}{2} \times 16 \times 20\frac{1}{2}$ $\frac{5}{8} \times 6 \times 10\frac{1}{2}$ $\frac{5}{8} \times 16 \times 20\frac{1}{2}$ $\frac{3}{4} \times 6 \times 10\frac{1}{2}$ $\frac{3}{4} \times 16 \times 20\frac{1}{2}$ $\frac{7}{8} \times 6 \times 10\frac{1}{2}$ $\frac{7}{8} \times 16 \times 20\frac{1}{2}$ $1 \times 6 \times 10\frac{1}{2}$ $1 \times 16 \times 20\frac{1}{2}$ $1\frac{1}{8} \times 6 \times 10\frac{1}{2}$ $1\frac{1}{8} \times 16 \times 20\frac{1}{2}$ $1\frac{1}{4} \times 6 \times 10\frac{1}{2}$ $1\frac{1}{4} \times 16 \times 20\frac{1}{2}$	
DA-14 DA-516 DA-38 DA-716 DA-12 DA-916 DA-58 DA-1116 DA-34 DA-2732		$\frac{1}{4} \times 4\frac{1}{2} \times 6\frac{1}{2}$ $\frac{5}{16} \times 4\frac{1}{2} \times 6\frac{1}{2}$ $\frac{3}{8} \times 4\frac{1}{2} \times 6\frac{1}{2}$ $\frac{7}{16} \times 3\frac{1}{2} \times 5\frac{1}{2}$ $\frac{1}{2} \times 4\frac{1}{2} \times 6\frac{1}{2}$ $\frac{9}{16} \times 3\frac{1}{2} \times 5\frac{1}{2}$ $\frac{5}{8} \times 7 \times 9$ $1\frac{1}{16} \times 4\frac{1}{2} \times 6\frac{1}{2}$ $\frac{3}{4} \times 7 \times 9$ $\frac{27}{32} \times 4\frac{1}{2} \times 6\frac{1}{2}$	
DB-916 DB-58 DB-1116 DB-34 DB-2732		$\frac{9}{16} \times 3\frac{1}{2} \times 5\frac{1}{2}$ $\frac{5}{8} \times 7 \times 9$ $1\frac{1}{16} \times 4\frac{1}{2} \times 6\frac{1}{2}$ $\frac{3}{4} \times 7 \times 9$ $\frac{27}{32} \times 4\frac{1}{2} \times 6\frac{1}{2}$	
Catalog Number	Hammer Make	Model No.	
DAA-2 DAA-5 DAA-6 DAA-6 DAA-7 DAA-8	Phillips B & D Milw. Skil Skil Hilti	747 5045, 5050 5300 726 728 TE-17	
DBB-2	Phillips		
DAB-P	All	All	
Catalog Number	Size		
	Width	Length	
CC-112 CC-118	1" 1"	12" 18"	
BP-012 BP-018	— —	12" 18"	
CB-19164 CB-24 CB-2584	1 $\frac{1}{16}$ " DIA. 2" DIA. 2 $\frac{5}{8}$ " DIA.	4" 4" 4"	
CBA-618 CBA-1534	— —	6 $\frac{1}{8}$ " 15 $\frac{3}{4}$ "	
CBS-716434	$\frac{7}{16}$ " DIA.	4 $\frac{3}{4}$ "	
S-47	Fits All RH Type Chuck Heads		
RH-514 RH-516 RH-538 RH-512 RH-558 RH-534 RH-578	$\frac{1}{4}$ " $\frac{3}{16}$ " $\frac{3}{8}$ " $\frac{1}{2}$ " $\frac{5}{8}$ " $\frac{3}{4}$ " $\frac{7}{8}$ "		



606 hammer/drill kit and accessories



Listed by



specifications

AMPS 3.9
VOLTS 110 AC/DC Universal Motor
RPM No Load: High Speed 3,000; Low Speed 1,250. **Loaded:** High Speed 1,650; Low Speed 750
IMPACT Blows per Minute: High speed, 37,000; Low speed, 15,000. **Intensity:** Adjustable for heavy to zero impact at both speeds.
WEIGHT 6 lbs.
LENGTH 12"
SPINDLE OFFSET 1"
CONSTRUCTION Electrical: long life armature, ball bearing mounted. **Mechanical:** precision parts throughout. Sealed ball bearings assure long, dependable life. **Housing:** high impact plastic and cast aluminum.
CHUCK Geared, industrial grade, $\frac{3}{8}$ " capacity.
CORD 10 ft., heavy duty cable with molded plug.

- **VERSATILE**
Drills concrete, wood and steel.
- **SEALED BALL BEARINGS**
the finest steel ball bearings...sealed in...provides longer life and durability.
- **NEW RUGGED GRIP** Exclusively designed new pistol grip allows easier handling, provides better balance and durability on the job.
- **EASIER TO USE DEPTH GAUGE AND SIDE HANDLE** Precision engineered depth gauge easily adjustable for proper drilling depth. Side handle reverses for either left or right handed operation.
- **SHOCK PROOF HIGH IMPACT HOUSING** Rugged high impact plastic bonded to cast aluminum assures protection and ability to withstand even the toughest use.

606-3K hammer/drill kit contains...

Description	Catalog Number
Chuck Key & Holder	3966
Handle	3982
Depth Gauge	3970
Carrying Case	3971

606-3K with steel case as listed above
606-3L same as 606-3K, excluding steel carrying case

PERCUSSION ROTARY CARBIDE- TIPPED DRILL BITS

Catalog Number	Size
D-145	$\frac{1}{4}$ " x 4"
D-14	$\frac{1}{4}$ " x 6"
D-165	$\frac{5}{16}$ " x 4"
D-16	$\frac{5}{16}$ " x 6"
D-385	$\frac{3}{8}$ " x 4"
D-38	$\frac{3}{8}$ " x 6" ($\frac{1}{4}$ " shank)
D-12	$\frac{1}{2}$ " x 7" ($\frac{3}{8}$ " shank)

K-457 impact hammer

Designed specifically for installing
RED HEAD self-drilling anchors.

- **Fewer Moving Parts**
- **Light Weight**
- **Rugged Construction**
- **Simplified Maintenance**

K-457 Comes complete with kit
K-457-WK Same as K-457 without kit
(includes pulley spanner wrench and allen wrench)



K-457 impact hammer kit contains...

Description	Catalog Number
Carrying Case	H-10330
Dust Guard	H-10096
Spanner Wrench	H-10107
Plunger Spring	H-10057
Oil Can W/Oil	H-10468
Blow Out Bulb	BB10
Allen Wrench	H-10475
Chuck Assembly	CA-400 $\frac{3}{8}$ "



Listed by





PITTSBURGH TESTING LABORATORY

ESTABLISHED 1881

CHICAGO, ILLINOIS

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TESTS OF: RED HEAD SELF-DRILLING CONCRETE ANCHORS

Cat. No.	Bolt Size	PULLOUT TESTS			SHEAR TESTS		
		Tensile Load, Lbs.	Average Load, Lbs.	Type of Failure	Shear Load, Lbs.	Average Load, Lbs.	Type of Failure
S-14	¼"	3,728 5,125 3,175	4,009	Concrete Failed Concrete Failed Anchor Pulled Out*	1,000 1,550 1,540	1,363	Bolt, Shear Bolt, Shear Bolt, Shear
S-16	¾"	4,625 5,025 3,625	4,425	Concrete Failed Concrete Failed Concrete Failed	1,930 2,240 2,050	2,073	Bolt, Shear Bolt, Shear Bolt, Shear
S-38	¾"	6,125 6,425 5,975	6,175	Concrete Failed Concrete Failed Concrete Failed	3,270 3,320 3,740	3,443	Bolt, Shear Bolt, Shear Bolt, Shear
S-12	½"	9,809 9,109 8,859	9,259	Concrete Failed Concrete Failed Anchor Pulled Out*	6,660 7,020 6,890	6,856	Bolt, Shear Bolt, Shear Bolt, Shear
S-58	¾"	15,025 11,075 12,175	12,758	Concrete Failed Concrete Failed Anchor Pulled Out*	12,160 11,500 12,800	12,153	Bolt, Shear Bolt, Shear Bolt, Shear
S-34	¾"	17,325 17,675 18,025	17,675	Concrete Failed Concrete Failed Concrete Failed	14,600 17,400 17,550	16,516	Bolt, Shear Bolt, Shear Bolt, Shear
S-78	¾"	19,025 20,725 18,575	19,442	Concrete Failed Concrete Failed Concrete Failed	18,850 18,900 18,700	18,816	Bolt, Shear Bolt, Shear Bolt, Shear

CONCRETE USED FOR TESTS RANGED FROM 3325 TO 4280 OR AN AVERAGE OF 3802 PSI.

*Anchor capacities where "Anchor Pulled Out" were substantially the same as in the case of concrete failures, or higher.

TESTS OF: RED HEAD MULTI-SET CONCRETE ANCHORS

Cat. No.	Bolt Size	PULLOUT TESTS			SHEAR TESTS		
		Tensile Load, Lbs.	Average Load, Lbs.	Type of Failure	Shear Load, Lbs.	Average Load, Lbs.	Type of Failure
MS-14	¼"	2690 1770 2650 2870 2490	2494	Concrete Failed Anchor Pulled Out Concrete Failed Concrete Failed Concrete Failed	1800 1870 1820	1830	Bolt, Shear Bolt, Shear Bolt, Shear
MS-38	¾"	4430 3980 3030 3700 3890	3806	Concrete Failed Concrete Failed Concrete Failed Anchor Pulled Out Anchor Pulled Out	3500 3820 3900	3740	Bolt, Shear Bolt, Shear Bolt, Shear
MS-12	½"	6620 6140 6060	6278	Concrete Failed Concrete Failed Concrete Failed	6180 6720 6700	6533	Bolt, Shear Bolt, Shear Bolt, Shear
MS-58	¾"	8465 6485 8475 7625 9155	8041	Concrete Failed Concrete Failed Concrete Failed Concrete Failed Concrete Failed	10,120 11,590 6950 9160 9810	9525	Anchor, Shear Anchor, Shear Anchor, Shear Anchor, Shear Anchor, Shear
MS-34	¾"	10,520 11,360 9940	10,607	Concrete Failed Concrete Failed Concrete Failed	15,000 16,000 16,000	15,667	Bolt, Shear Bolt, Shear Bolt, Shear

CONCRETE USED FOR TESTS HAD AN AVERAGE COMPRESSIVE STRENGTH OF 4380 P.S.I.

TESTS OF: RED HEAD NON-DRILLING ANCHORS

Cat. No.	Bolt Size	PULLOUT TESTS		
		Tensile Load, Lbs.	Average Load, Lbs.	Type of Failure
J-14	¼"	2,810 2,860 2,680 3,300	2,912	Concrete Failed Concrete Failed Concrete Failed Concrete Failed
J-38	¾"	5,450 4,550 4,600 4,700	4,825	Concrete Failed Concrete Failed Concrete Failed Concrete Failed
J-12	½"	8,140 7,520 7,320 7,500	7,620	Concrete Failed Concrete Failed Concrete Failed Concrete Failed
J-58	¾"	12,000 11,400 10,600 11,280	11,570	Concrete Failed Concrete Failed Concrete Failed Concrete Failed
J-34	¾"	17,000 17,150 17,350	17,166	Concrete Failed Concrete Failed Concrete Failed

CONCRETE RANGED FROM 2,460 - 3,840 PSI — AVERAGE 3,150 PSI.

Procedure for tensile tests was axial loading until ultimate failure of concrete or anchors. Procedure for shear tests was loading to a steel plate bolted to the anchors in a plane perpendicular to the axis of the anchor. Concrete blocks used for tests were of a 1:3:5 mix, having a compressive strength as indicated in each table at 28 days. Compressive strengths were checked using standard 6" x 12" test cylinders.

NOTE: Tests show ultimate total loads — not safe working loads. See manufacturer's recommended safety factors.

Manufacturers' recommended safe working loads in 3500 PSI concrete = 25% of the average loads shown above.



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TESTS OF: RED HEAD WEDGE ANCHORS

Anchor Body Diameter	Test No.	PULL-OUT			SHEAR		
		Total Load Pull-Out Lbs.	Average Load Pull-Out Lbs.	Type of Failure	Total Load Shear Lbs.	Average Load Shear Lbs.	Location of Failure
1/4"	1	2303	2346	Concrete Failed	1940	2100	Shear
	2	2393		Concrete Failed	2250		Shear
	3	2343		Concrete Failed	2110		Shear
3/8"	1	3863	3943	Concrete Failed	4640	3946	Shear
	2	4063		Concrete Failed	3740		Shear
	3	3903		Concrete Failed	3460		Shear
1/2"	1	5759	5219	Concrete Failed	7500	7067	Shear
	2	4849		Concrete Failed	6700		Shear
	3	5049		Concrete Failed	7000		Shear
5/8"	1	7429	7782	Concrete Failed	10,400	10,800	Shear
	2	8289		Concrete Failed	11,100		Shear
	3	7629		Concrete Failed	10,900		Shear
3/4"	1	12,679	12,069	Concrete Failed	18,600	19,133	Block Split
	2	12,279		Concrete Failed	17,500		Block Split
	3	11,229		Concrete Failed	21,300		Anchor Shear
* 7/8"	1	15,600	13,266	Pull Thru	28,200	26,366	Shear
	2	11,900		Pull Thru	24,200		Shear
	3	12,300		Pull Thru	26,700		Shear
* 1"	1	17,750	18,275	Concrete Failed	35,100	37,533	Shear
	2	18,500		Concrete Failed	38,300		Shear
	3	18,500		Pull Thru	39,200		Shear
* 1 1/4"	1	41,400	45,467	Pull Thru	51,500	51,500	Test Stopped
	2	47,500		Concrete Failed			Before Failure
	3	47,500		Concrete Failed			

Tests were conducted in concrete blocks having compressive strengths ranging from 3690 to (*4060) P.S.I. or an average of 3875 P.S.I.

TESTS OF: RED HEAD SLEEVE ANCHORS

Anchor Body Diameter	Test No.	PULL-OUT*			SHEAR**		
		Total Load Pull-Out Lbs.	Average Load Pull-Out Lbs.	Type of Failure	Total Load Shear Lbs.	Average Load Shear Lbs.	Location of Failure
1/4"	1	2510	2173	Concrete Failed	1060	1125	Pin Shear
	2	2090		Concrete Failed	1180		Pin Shear
	3	1920		Concrete Failed	1140		Pin Shear
3/8"	1	2470	2540	Pin Separation	1920	2000	Pin Shear
	2	2600		Pin Separation	1960		Pin Shear
	3	2550		Pin Separation	2120		Pin Shear
1/2"	1	3970	4061	Pin Pull Thru	3170	3116	Pin Shear
	2	3995		Pin Pull Thru	3180		Pin Shear
	3	4220		Pin Pull Thru	3000		Pin Shear
3/4"	1	6030	6203	Pin Separation	4500	4523	Pin Shear
	2	6540		Concrete Failed	4460		Pin Shear
	3	6040		Pin Separation	4610		Pin Shear
5/8"	1	8370	8233	Concrete Failed	6840	6920	Pin Shear
	2	8360		Concrete Failed	6620		Pin Shear
	3	7970		Concrete Failed	7300		Pin Shear
3/4"	1	10,360	9955	Concrete Failed	11,700	11,466	Pin Shear
	2	10,020		Concrete Failed	11,700		Pin Shear
	3	9485		Concrete Failed	11,000		Pin Shear

*Pull-out tests were conducted in concrete blocks having compressive strength on an average of 3960 P.S.I.

**Shear tests were conducted in 3760 P.S.I.

TESTS OF: RED HEAD STUD CONCRETE ANCHORS

Cat. No.	Stud Size	PULLOUT TESTS			SHEAR TESTS		
		Tensile Load, Lbs.	Average Load, Lbs.	Type of Failure	Shear Load, Lbs.	Average Load, Lbs.	Type of Failure
JS-14	1/4"	2,370	2,660	Concrete Failed	2,260	2,020	Stud Sheared
		2,850		Concrete Failed	1,940		Stud Sheared
		2,750		Concrete Failed	1,850		Stud Sheared
JS-38	3/8"	4,210	4,290	Concrete Failed	4,660	5,170	Stud Sheared
		4,710		Concrete Failed	5,590		Stud Sheared
		3,950		Concrete Failed	5,270		Stud Sheared
JS-12	1/2"	6,220	5,620	Concrete Failed	8,500	8,710	Stud Sheared
		4,850		Concrete Failed	9,180		Stud Sheared
		5,780		Concrete Failed	8,440		Stud Sheared
JS-58	5/8"	10,480	9,240	Concrete Failed	11,650	11,817	Stud Sheared
		8,770		Concrete Failed	12,000		Stud Sheared
		8,470		Concrete Failed	11,800		Stud Sheared
JS-34	3/4"	13,000	12,650	Concrete Failed	19,400	18,017	Stud Sheared
		12,750		Concrete Failed	16,700		Stud Sheared
		12,200		Concrete Failed	17,950		Stud Sheared

CONCRETE USED FOR TESTS RANGED FROM 3,910 TO 4,060 PSI — AVERAGE 3,985 PSI.

Procedure for tensile tests was axial loading until ultimate failure of concrete or anchors. Procedure for shear tests was loading to a steel plate bolted to the anchors in a plane perpendicular to the axis of the anchor. Concrete blocks used for tests were of a 1:3:5 mix, having a compressive strength as indicated in each table at 28 days. Compressive strengths were checked using standard 6" x 12" test cylinders.

NOTE: Tests show ultimate total loads — not safe working loads. See manufacturer's recommended safety factors.

Manufacturers' recommended safe working loads in 3500 PSI concrete = 25% of the average loads shown above.

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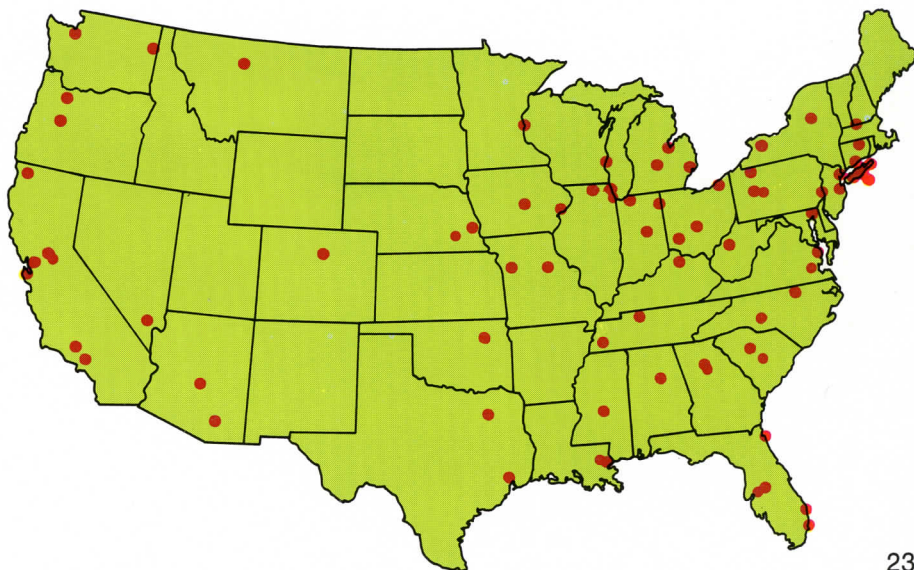
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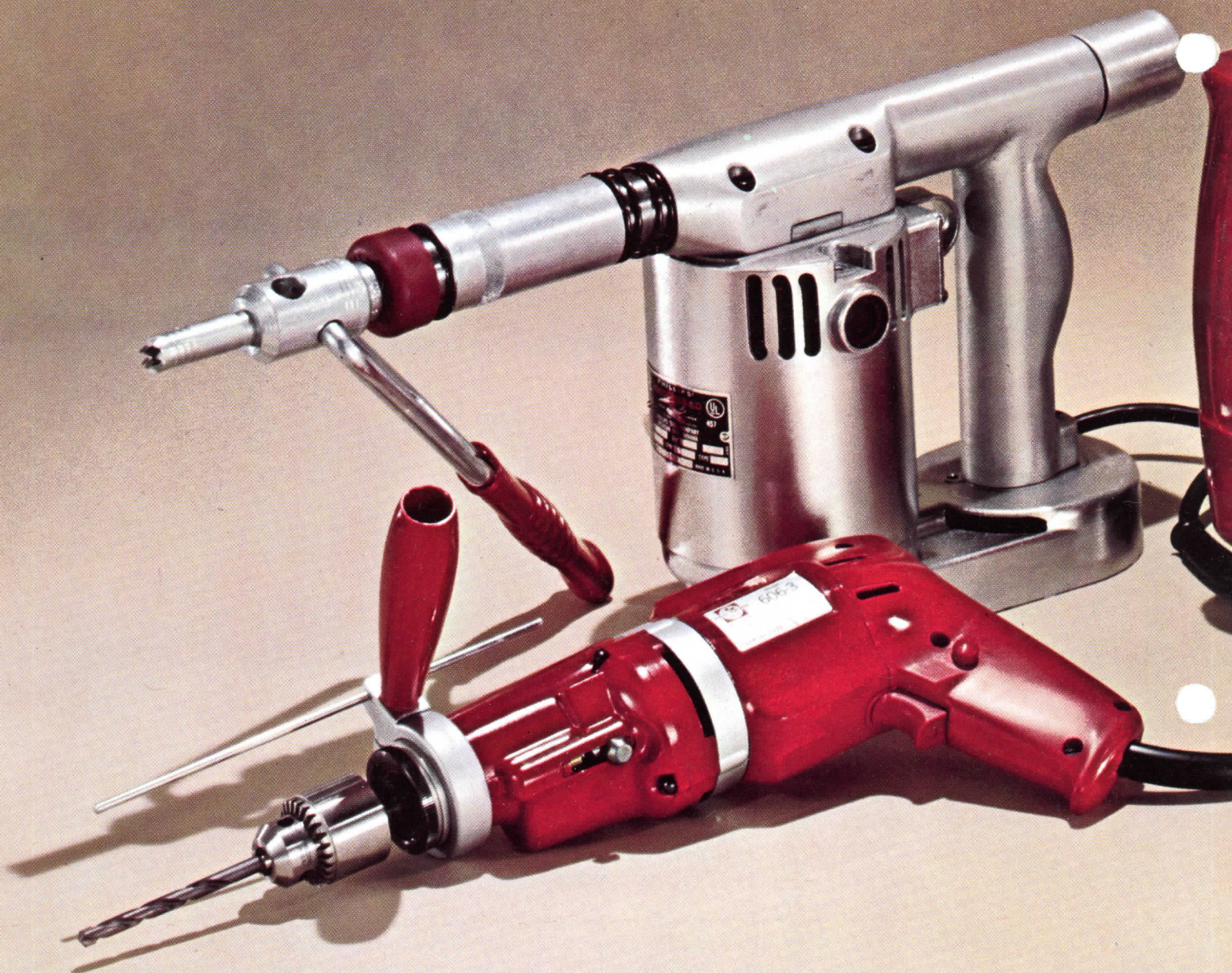
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